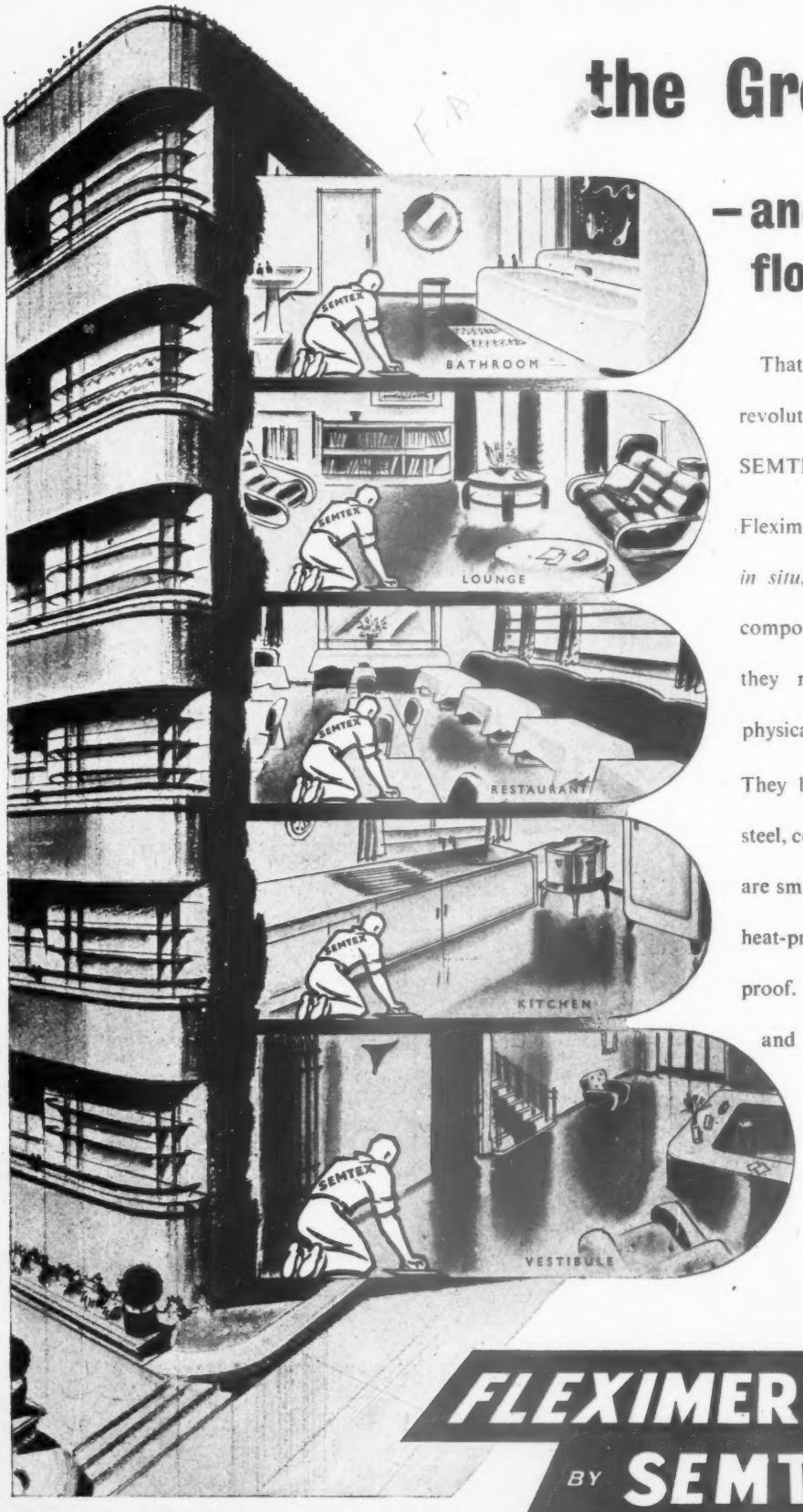
You'll want SEMTEX on the Ground Floor



—and on every other floor as well

That will be your inevitable reaction to the revolutionary flooring compositions which SEMTEX Technologists have evolved. Fleximer floors by SEMTEX, laid cold *in situ*, possess all the advantages of the compound of natural rubber and cement they replace, together with many other physical characteristics.

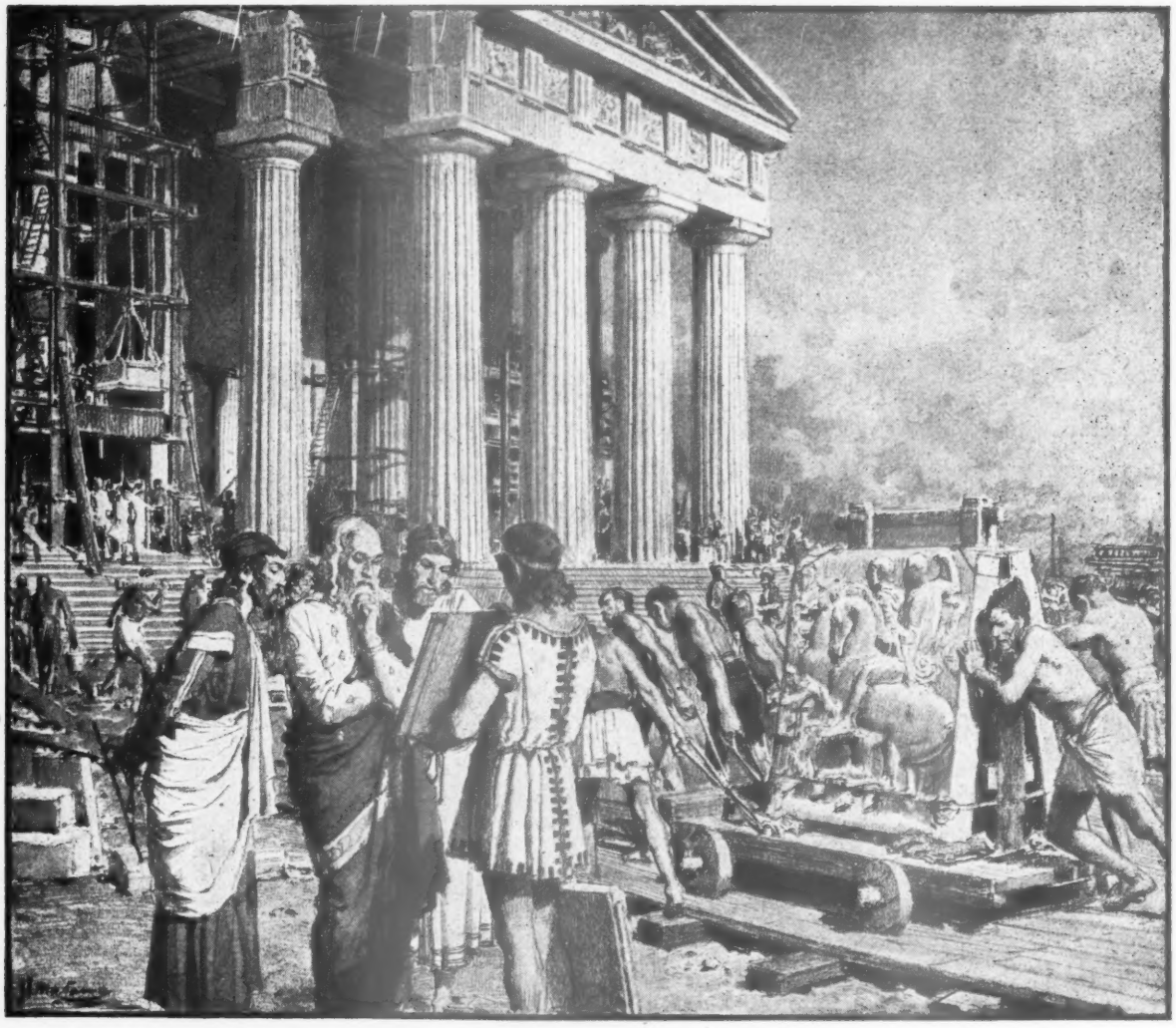
They bond positively to a clean base of steel, concrete, or other rigid material. They are smooth, flexible, damp-proof, hygienic, heat-proof, oil-proof, slip-proof and acid-proof. They are easy to clean, to keep clean, and possess outstanding durability.

● **Only work of first degree priority is at present undertaken, but arrangements are in hand for fleximer material to become generally available for the building programmes of the future.**

FLEXIMER FLOORS BY SEMTEX LTD.

SEMTEX LTD., SALES DIVISION, 91 REGENT ST., LONDON, W.1

48M/104



THE PARTHENON IN CONSTRUCTION—DESIGNED BY ICTINUS—DECORATED BY THE SCULPTINGS OF PHEIDIAS

The golden age of Greece saw a flowering of human genius unequalled in the history of the world.

The architecture of Callicrates and Ictinus—the discoveries of Archimedes, Pindar's odes and the philosophy of Socrates lit the lamp of learning which is still undimmed.

During the 4th and 5th Centuries B.C. Grecian cultural and military influence was world supreme. What was the reason?

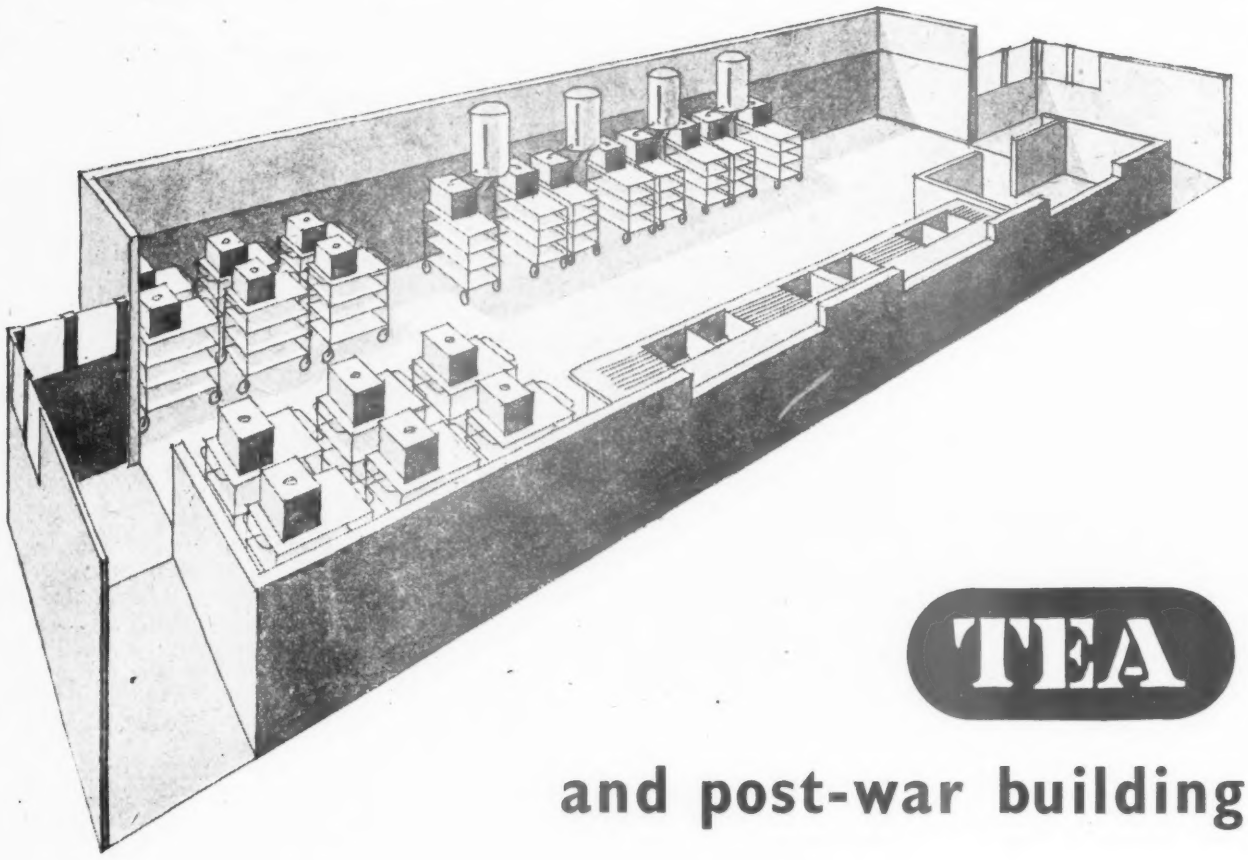
The Greeks at that time enjoyed a climate which was temperate and very invigorating and it was to this, principally, that they owed their remarkable activity of mind and body.*

A benign climate has always been a powerful stimulus to the progress of civilisation. It is demonstrated by the concentration of early cultural influence within a climatic belt where an average temperature of 70° Fahrenheit coincided with areas of moderate humidity. For 4,000 years comparable civilisation did not develop outside this belt until man discovered adequate defences against extremes of climate and replaced the brazier and roof-smoke-hole by the hypocaust and and later by the chimney fire-place.

These primitive defences are recognisable as the rudiments of Air Conditioning and resulted in the extension of civilisation to less temperate areas.

The modern analogy is the Carrier installation producing in any enclosed space the atmosphere in which we may live and work with maximum comfort and efficiency.

** Since that time it is significant that deterioration in climate has been followed by deterioration in national prosperity and world influence.*



TEA and post-war building

DURING the war, over 3,000 industrial firms have approached the Empire Tea Bureau about their tea catering services.

Many of them asked advice on the re-organizing of tea-stations, or the planning of entirely new tea-service departments.

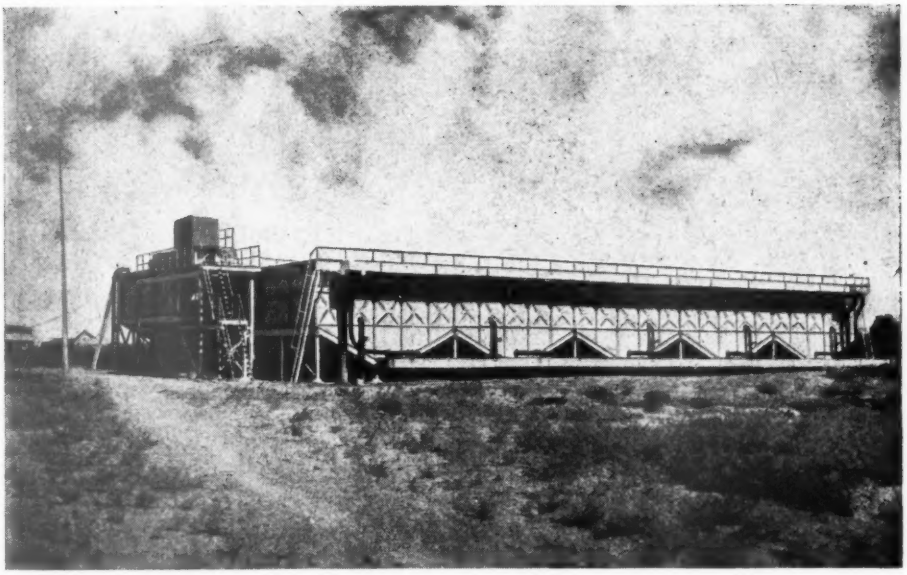
Many structural changes had to be made in industrial buildings because no adequate provision for the national beverage had been made in the original plans. Tea in factory and office has come to stay, and to provide tea for 1,000 workers in ten minutes needs planned economy in time and space.

In post-war planning everything can be built right the first time, and we shall be happy to put our wide experience before any architect, builder or caterer who would like to ring us up or write to us.

The Empire Tea Bureau represents all the Tea Producers of the British Empire. Its main function is to act as a clearing house for ideas and advice freely available to anyone with any catering problem involving tea.

THE EMPIRE TEA BUREAU
REGENT HOUSE
89 KINGSWAY WC2
CHANCERY 6601 (7 LINES)

Unusual Undertakings



by the "Tank People"

YET another unusual installation by Braithwaites are these water treatment tanks erected in Iraq. Two batteries of tanks, carried on steel structures at different levels, provide primary and secondary sedimentation. They play an essential part in the adequate purification of heavily silted water in a semi-tropical location.

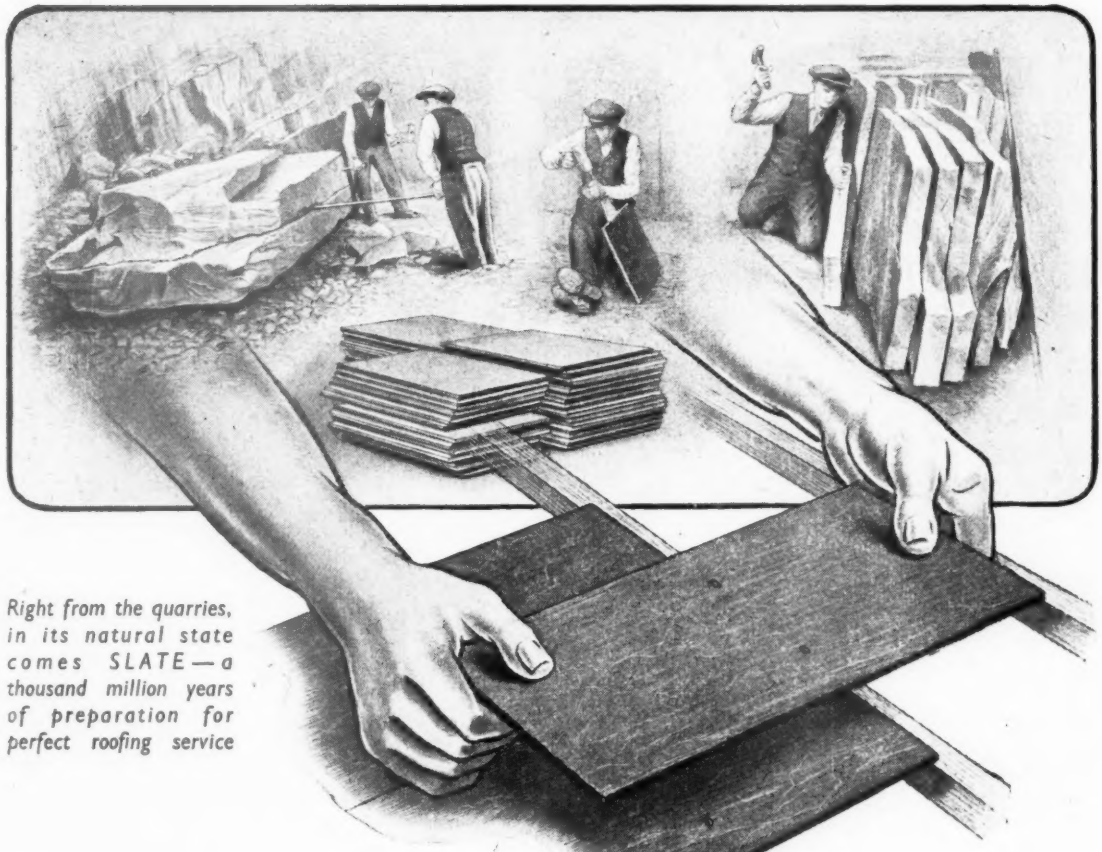
Tanks for all storage needs are fully described in the latest Braithwaite brochure. You are invited to apply for a copy.

BRAITHWAITE

PRESSED STEEL TANKS

TRADE MARK

BRAITHWAITE & CO. ENGINEERS LTD.
35, KINGS HOUSE, HAYMARKET, LONDON, S.W.1 · TEL.: WHItehall 3997



Right from the quarries, in its natural state comes SLATE—a thousand million years of preparation for perfect roofing service

NORTH WALES SLATE

—the practically imperishable roofing

Proof against crumbling under the action of heat and frost, impervious to the corrosive influence of acids in the atmosphere, non-porous and completely waterproof, North Wales Slates guarantee roofing service unapproached by any artificial roofing material.

The simple principle on which slate roofing is built up, its economy in the use of supporting material and its possibilities for planning attractive roofing effects, make slates - for - roofing a sound common-sense proposition for the modern builder.

SLATES

THE UNPARALLELED ROOFING INVESTMENT

NORTH WALES SLATE QUARRIES ASSOCIATION — WALES FOR SLATE

SECRETARY 5 BANGOR STREET CAERNARVON

DESIGNED FOR MASS-PRODUCTION AT A POPULAR PRICE

The Prestcold built-in refrigerator illustrated was photographed in the "Cambridge" post-war demonstration kitchen erected in the showrooms of the Cambridge Electricity Supply Co. Ltd. It possesses the following distinct advantages:—

Storage capacity of approximately 4½ cubic feet, which will hold all the perishable foodstuffs for a family of four.

Larder space rendered unnecessary. Dry goods and non-perishable foodstuffs would be kept in kitchen cupboards.

Waist-high refrigerator door, allowing access to interior without stooping.

Height adaptable by varying position of supporting frames.

Refrigerator can be built into kitchen fitments with cupboard space above and below it.

Design provides for adequate ventilation of mechanism without the necessity for special air-bricks or ducting.

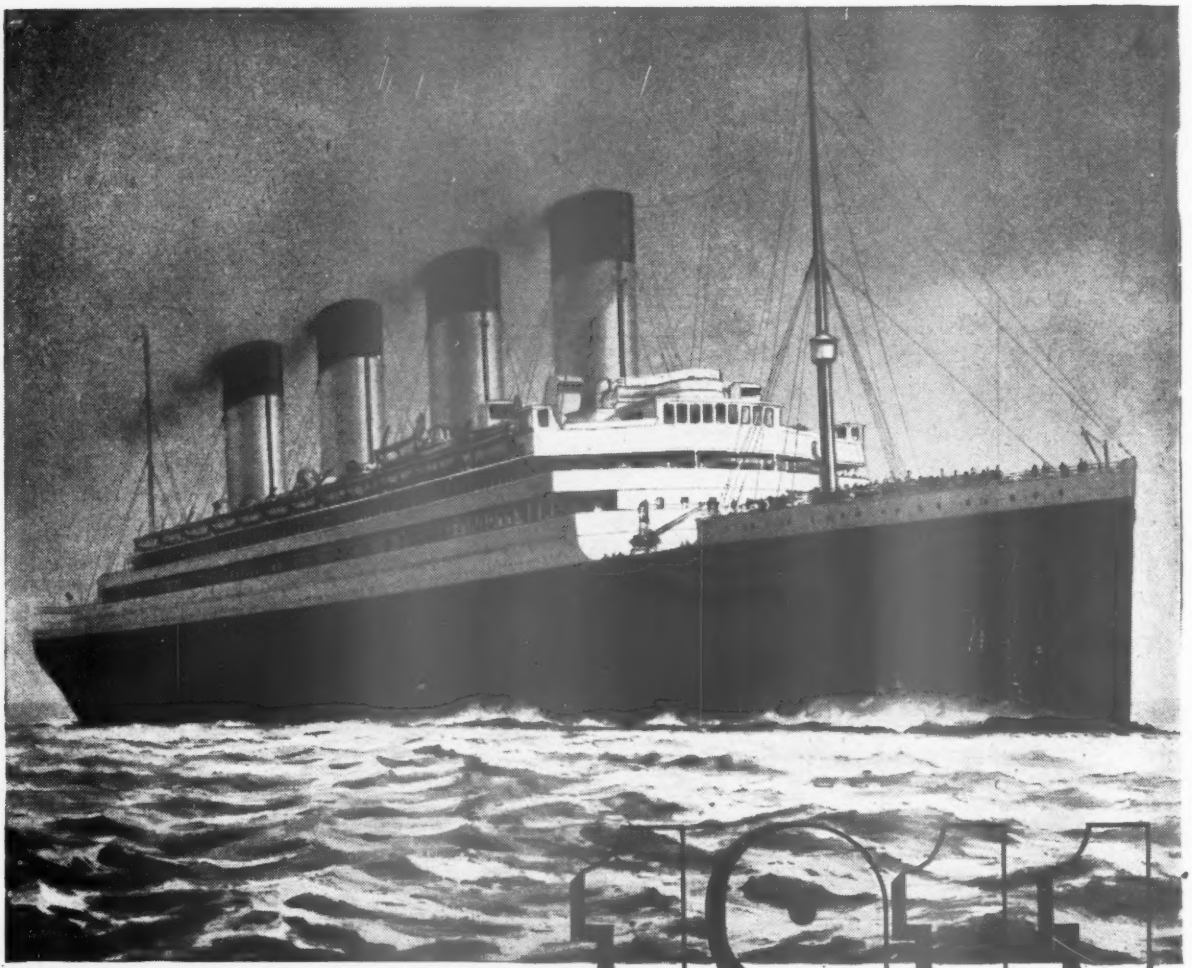
Ice making and 'cold cooking' facilities.

Most important too is the fact that this Prestcold refrigerator provides the food storage temperatures necessary for the proper safeguarding of perishable foods—for instance 35°F for fresh fish and poultry; 40°F for milk — and even the lower temperatures needed to store the frozen foods which will be available after the war. It will be most economical in current consumption, using only one unit a day.

PRESTCOLD *Refrigeration*

SERVICE BRANCHES:— LONDON: Power Rd., Chiswick, W.4. MANCHESTER: 353 Chester St., Cornbrook. LEEDS: 55 Gt. George St., 1.
OXFORD: Cowley. Installation and servicing facilities are available in all parts of Great Britain.

A PRODUCT OF THE PRESSED STEEL COMPANY LIMITED



The White Star liner Olympic completes her maiden voyage. Southampton to New York in 5 days, 16 hours 42 minutes. June 21, 1911.

WHEN WE WERE YOUNG 1911

The leisurely days were gone. Mankind was competing in a race for faster and faster movement. Motor cars, aeroplanes, ocean greyhounds were acclaimed because they carried one somewhere in less time than of old. Only the earth seemed content to amble round its orbit at its steady unchanging pace.

It is certainly true that the succeeding thirty odd years since our foundation have allowed us little leisure. Keeping abreast of almost frantic progress has been a whole time job. But we look back on the years with no regrets. The achievement of success has been worth while.

CELLON
CERRIC CERRUX

CELLON

THE PERFECT FINISH

CELLON LTD., KINGSTON-ON-THAMES TELEPHONE: KINGSTON 1234 (5 lines)

Thorp-Hambrock Co., Ltd., Montreal, Canada. Cellon Corporation Pty., Ltd., Sydney, Australia

CVS-533

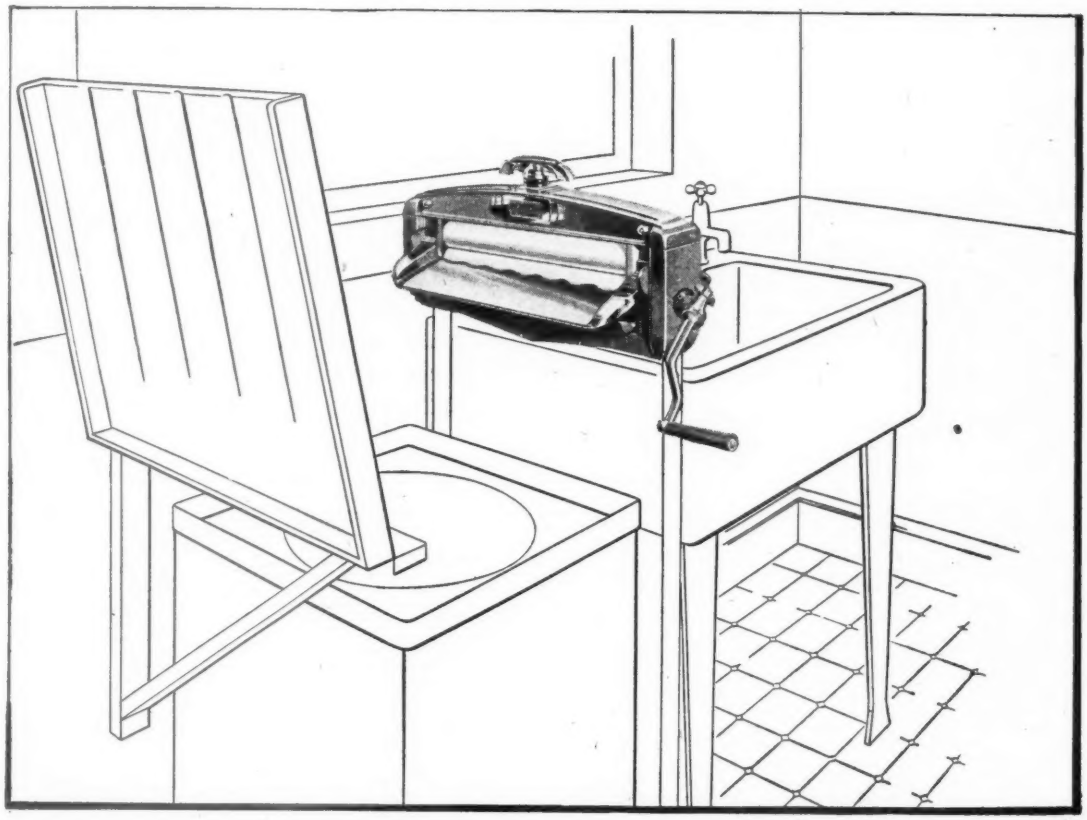
Part view of the Service side
of a Cafeteria Counter.

An Installation by

R. & A. MAIN LIMITED **LONDON AND FALKIRK**

★

"Her New Deal—please— in the post-war world"



"BUT MRS. GREEN MADE-DO before the war. Oh, I know that she sometimes grumbled . . . . . "

" Yes, she grumbled all right. Because it was making-do with a vengeance. What a kitchen! A cramped shallow trough for a sink, no draining board, a copper she couldn't use unless she had a huge coal fire on every wash-day, a mangle it would break a man's back almost to turn . . . . . "

" Not good enough — we agree. So Mrs. Green joins hands with young Mrs. Brown! They want the planners to plan for them. Now what exactly do they want?"

They want a kitchen that has been designed for them. They don't feel they were designed for the old type of kitchen!

The kitchen which a carefully thought-out survey has laid down as fulfilling the minimum requirements of a home-keeping woman. A sink of the correct height and depth, to be used for either dish-washing or clothes-rinsing. A removable or hinged draining board, steady when in position and suitably sloped. A wash-boiler under the draining board and next the sink to save mess and unnecessary labour.

And room for a rubber roller wringer, to enable them to do their home washing easily, without strain, yet with perfect results. The best wringer—and that means an Acme.

Interest in post-war housing means interest in the kitchen and the important work carried on there. Interest in that vital part of the work — the home laundry.

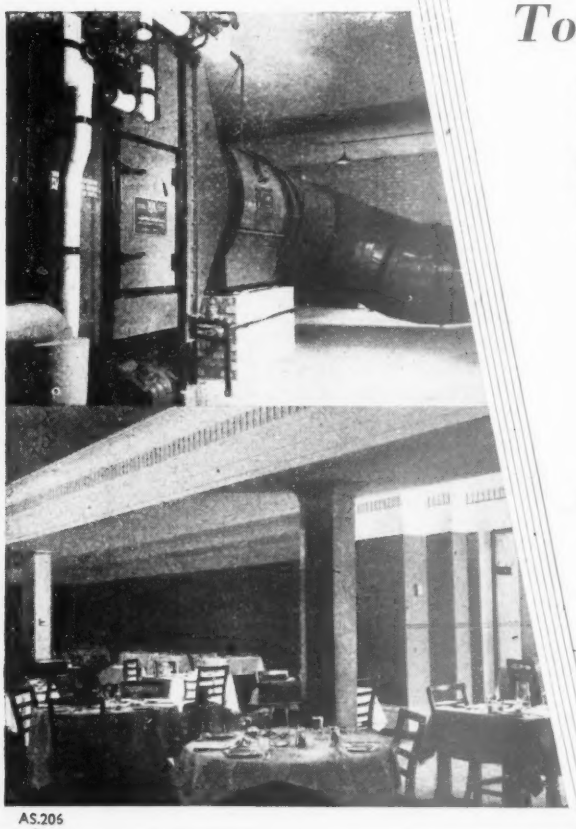
Surveys accepted and given definite support by Ministries and local authorities regard home laundry conditions as vital to house planning. Space should be provided for a rubber-roller wringer. No future kitchen ought to be planned without this provision. The wringer the housewife herself demands is the Acme. Experience has taught her it is the best.

If in your work you find any problem in connection with the fixing of wringers, please get in touch with us for advice or assistance. We will have much pleasure in helping you.

ACME

ACME WRINGERS LTD · DAVID STREET · GLASGOW · S·E

B



AS.206

To the Architect and Builder—

Post-War reconstruction will afford unparalleled opportunities to realise those ideals for which you have been striving.

We suggest that scientific ventilation and air conditioning will loom largely in the attainment of those ideals, and for that reason, we desire to place our services at your disposal.

WE HAVE:—

- A staff of experts competent to advise on any problem relating to air conditioning, ventilation, steam, dust and fume removal.
- Carried out numerous installations for well-known concerns in various parts of the Country and many factories, offices, restaurants, cinemas, theatres, and public buildings are equipped with Airscrew Fans and Systems.
- Applied our knowledge of aerodynamics to the design of the Airscrew Axial Flow Fan.
- A Research Department and a Wind Tunnel where theory and practice are co-ordinated.

WE ARE:—

- Ready and keen to co-operate with **you.**

AIRSCREW FAN SYSTEMS

THE AIRSCREW CO. LTD., GROSVENOR GARDENS HOUSE, LONDON, S.W.1.
Telephone: VICTORIA 4527 Telegrams: AIRSCREW, SOWEST, LONDON.
And at: Weybridge : Manchester : Glasgow

BUILDING BOARD QUESTIONNAIRE

Q What is Sundeala Hardboard ?

A *A homogeneous fibre building board formed under pressure to a density of not less than 50lb. per cubic foot. Made from pure wood fibre* SUNDEALA *is grainless, light in weight, and immensely strong. It can be nailed, screwed, sawn, planed and drilled, like ordinary wood, and its polished smooth surface permits of any decorative treatment. For greater permanence and durability this famous hardboard is scientifically waterproofed.*

Panelling to a Bar in Sundeala Hardboard.

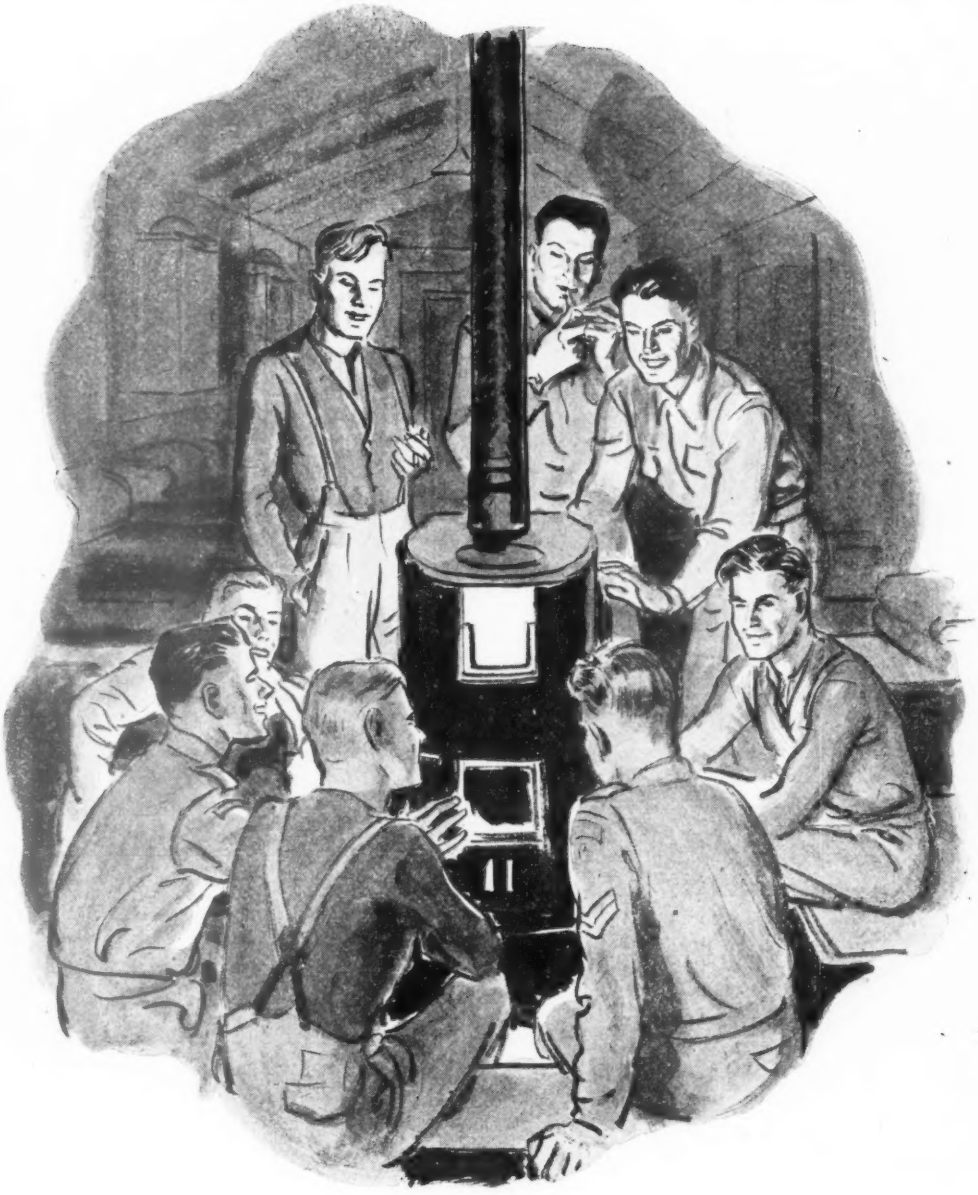
SUNDEALA Hardboard is the acknowledged leader in its field. It is extensively used for lining concrete forms, for cabinets, caravans, counters, signboards, show cases, motor van bodies, railway and general carriage work, etc., and whenever extra hard wear and tear is required. Full details on request.

The Pioneer All-British Hardboard

for EXTERIOR and INTERIOR USE

WATERPROOF BOARD
SUNDEALA
MADE IN ENGLAND

P.I.M. BOARD CO. LTD. & SUNDEALA BOARD CO., LTD., ALDWYCH HOUSE, LONDON, E.C.2. *Tel.: CHAncery* 8159



CENTRAL HEATING?

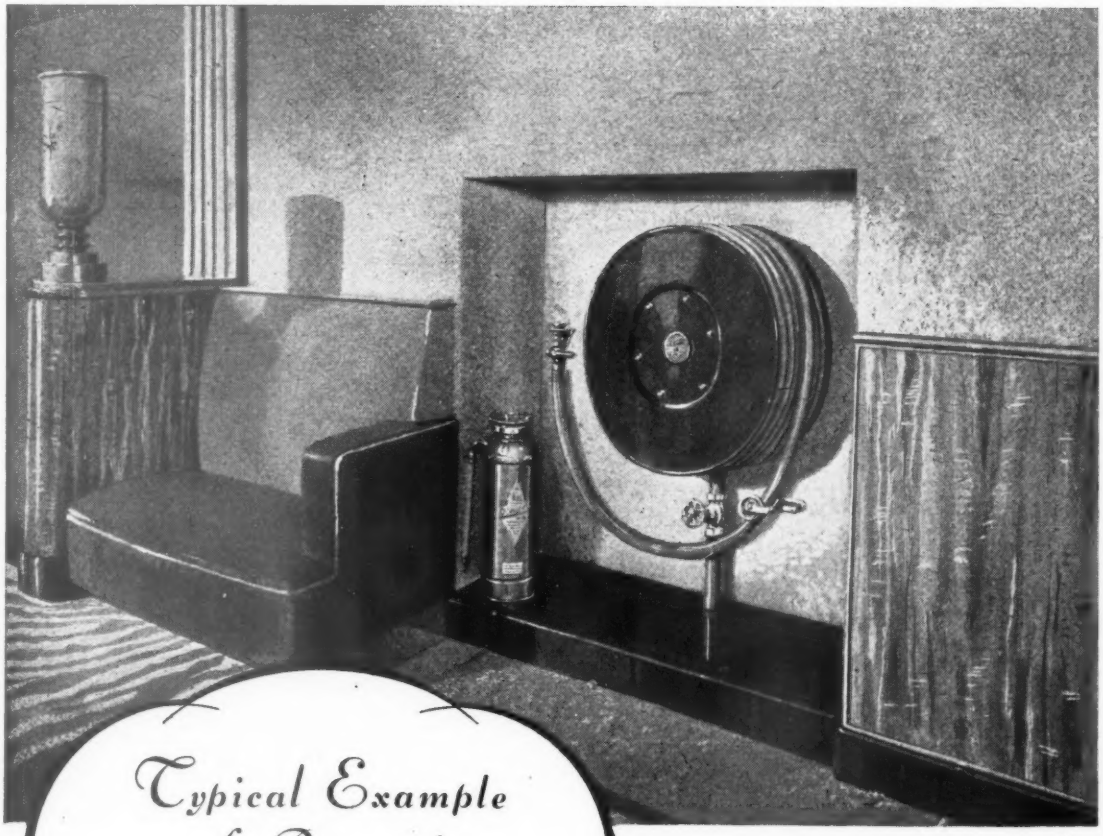
Central heating proper is . . . well, it isn't something that you have to crowd round for warmth

PLANNED central heating calls for long experience. Edgar's are ready today to co-operate with those whose concern it is to prepare for the comfort and convenience of the future.

Wm. EDGAR & SON LTD.
Gas Apparatus Manufacturers and Contractors.

Blenheim Works, Hammersmith, London, W.6
Telephone No.: RIVERSIDE 3486

PLANNING TOMORROW

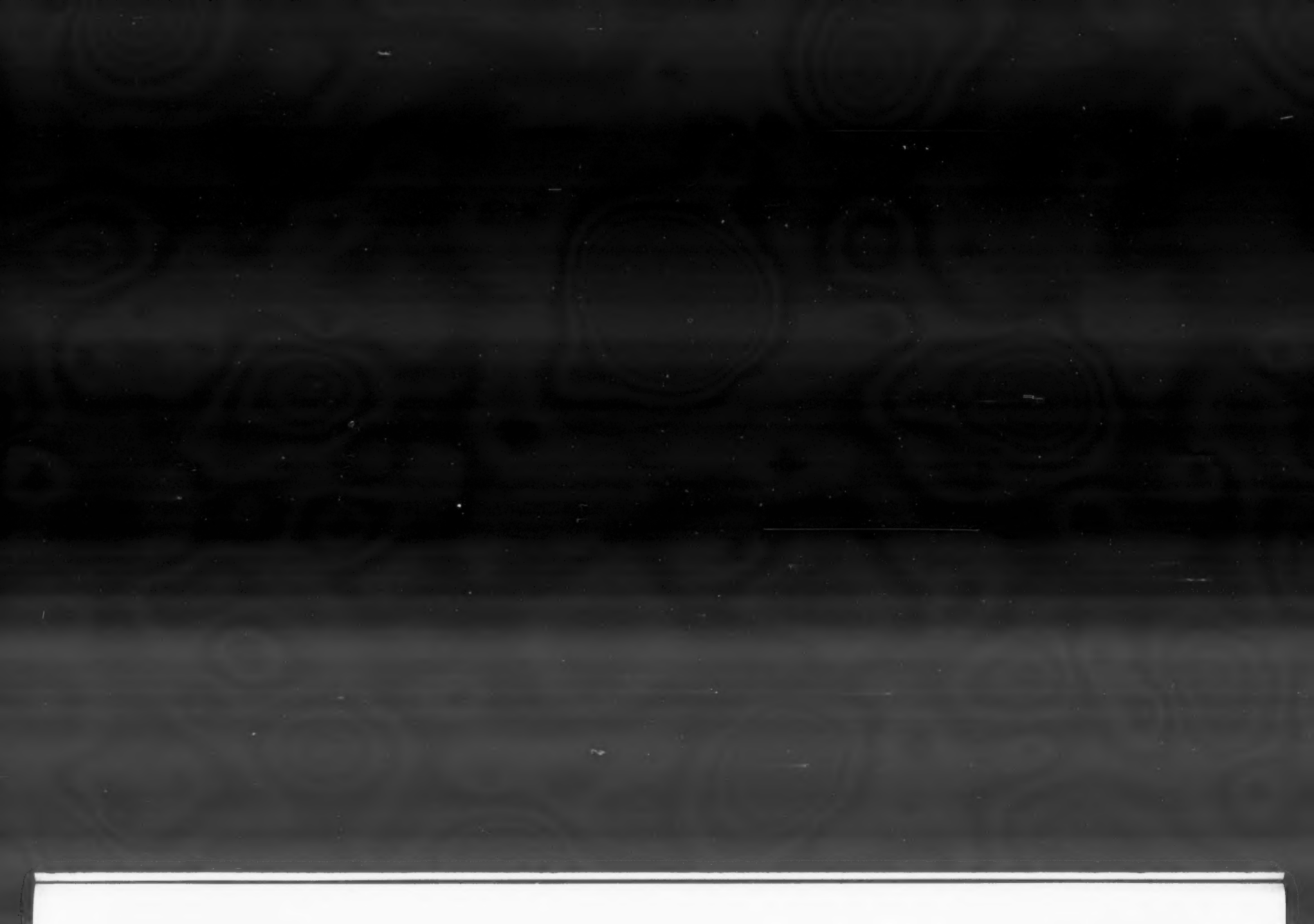


Typical Example of Recessed Fire Equipment

The above illustration is just one example of many ways in which accommodation for "Pyrene" Fire Equipment has been effectively provided in the Architect's Plans. We should be glad to co-operate and make suggestions from our wide experience; and thus, if we may, help you to plan fire protection for the buildings of to-morrow, so that they are adequately protected against the ravages of fire.

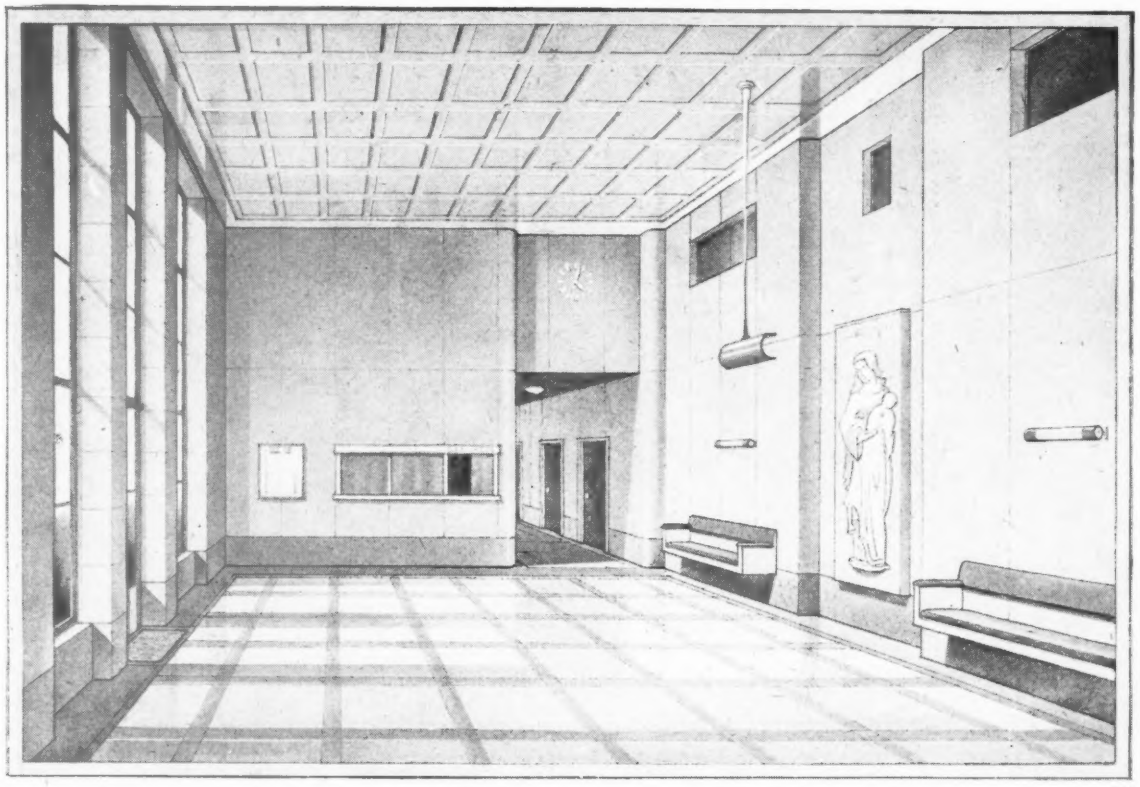
Pyrene TRADE MARK

THE PYRENE COMPANY LTD., GREAT WEST ROAD, BRENTFORD, MIDDLESEX.



A Hospital Entrance Hall

MESSRS. STANLEY HALL & EASTON AND ROBERTSON, ARCHITECTS

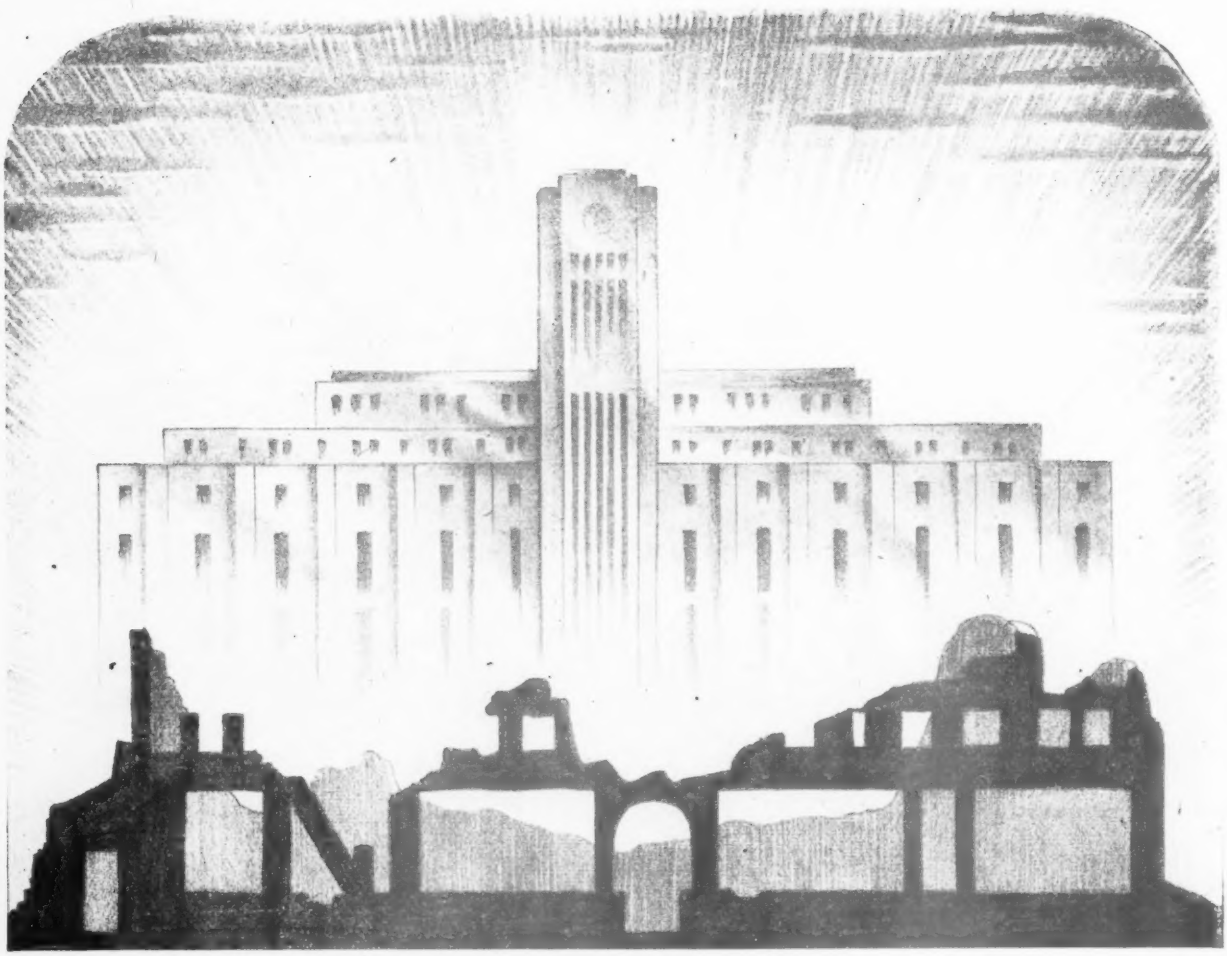


W4

In the design shown above Messrs. Stanley Hall & Easton and Robertson have further evidenced the fact that architects and interior decorators are offered in Warerite Laminated Plastics both a new material and a new medium of expression.

Here the architects have been at pains to demonstrate the possibilities of Warerite wall linings and panelling in so circumscribed a sphere as Hospital decoration. They have succeeded, too, in showing the conformability of the new medium to the austere in architecture.

Both as mural and ceiling decoration, and in its more utilitarian applications as surfacing for splash-backs, flush doors, table tops, bar and shop counters, here is unquestionably a material with a future. Highly resistant to wear and to the action of water, heat, acids and alcohol, its potentialities cover a considerable field. After the war Warerite wall panels and veneers will be available in a wide range of colours. Meanwhile it is a name to remember.



SHOP FRONTS AND INTERIORS. The use and application of new materials, developed during the stress of war, will play an all-important part in the rebuilding of new Britain.

ARCHITECTURAL WOOD AND METAL WORK. The entirely new standards in conception and manipulation which can now be employed will have a marked influence on the trend of new designs and the plans of modern architecture.

SHIP FURNISHINGS. Here, too, the standards already set by Parnalls in the famous trans-Atlantic liners of immediate pre-war years, will be but the basis for post-war design and treatment.

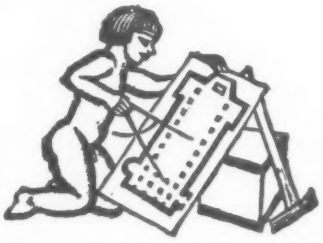
RESEARCH AND EXPERIENCE in all the above subjects are available within the framework of this organisation, and it is not too early to plan at once, having regard to the restricted means which will be available.

GEORGE PARNALL & COMPANY LTD

4 BEDFORD SQUARE LONDON WC1 Works: THE CAUSEWAY FISHPONDS BRISTOL

Telephone: Museum 7101 and 7102

In common with every other periodical this JOURNAL *is rationed to a small part of its peacetime needs of paper. Thus a balance has to be struck between circulation and number of pages. We regret that unless a reader is a subscriber we cannot guarantee that he will get a copy of the* JOURNAL. *Newsagents now cannot supply the* JOURNAL *except to a "firm order." Subscription rates: by post in the U.K. or abroad, £1 15s. 0d. per annum. Single copies, 9d.; post free, 11d. Special numbers are included in subscription; single copies, 1s. 6d.; post free, 1s. 9d. Back numbers more than 12 months old (when available), double price. Volumes can be bound complete with index, in cloth cases, for 15s. each; carriage 1s. extra. Goods advertised in the* JOURNAL *and made of raw materials now in short supply, are not necessarily available for export.*



DIARY FOR JANUARY FEBRUARY AND MARCH

Titles of exhibitions, lectures and papers are printed in italics. In the case of papers and lectures the authors' names come first. Sponsors are represented by their initials as given in the glossary of abbreviations on the front cover.

BIRMINGHAM. *When We Build Again.* Exhibition. At George Dixon Grammar School, Edgbaston, Birmingham. (Sponsor, TCPA). JAN. 15-21

CROSBY, LIVERPOOL. *The English Town: Its Continuity and Development.* (Sponsor, TCPA). JAN. 17-31

CHESHUNT. *When We Build Again.* Exhibition. (Sponsor, TCPA). FEB. 28-MAR. 10

LICHFIELD. *The English Town: Its Continuity and Development.* Exhibition. (Sponsor, TCPA). The Town and Country Planning Association is holding a Conference on the last day of the Exhibition. Speaker, F. J. Osborn. FEB. 12-17

LONDON. Discussion. *Lay-out of Road Intersections.* Introducer, A. J. H. Clayton. At the Institution of Civil Engineers, Great George Street, Westminster, S.W.1. (Sponsor, Institution of Civil Engineers). 5.30 p.m. JAN. 9

L. H. Keay. *Post-War Housing.* At 66, Portland Place, W.1. (Sponsor, RIBA). 6 p.m. JAN. 16

Applications of Electricity to Water Supply. Discussion. At the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2. (Sponsor, IEE). 5.30 p.m. JAN. 22

S. R. Raffety. *Rural Water Supplies.* At the Institution of Civil Engineers, Great George Street, Westminster, S.W.1. (Sponsor, Institution of Civil Engineers). 5.30 p.m. JAN. 23

TVA Documentary Film. At a joint meeting of the Town Planning Institute and the Institution of Civil Engineers. At the Institution of Civil Engineers, Great George Street, S.W.1. 6 p.m. JAN. 25

National Federation of Building Trades Employers Luncheon. At the Connaught Rooms. Chairman, J. G. Gray, the President. Guest of honour, Ernest Bevin, M.P., Minister of Labour and National Service. JAN. 25

G. Pierce Clingan, City Building Surveyor, Liverpool. *National Building Regulations.* At the Royal Society of Arts, John Adam Street, Adelphi, W.C.2. (Sponsor, Royal Society of Arts). 1.45 p.m. JAN. 31

H. M. Webb. *Reconstruction under the Town and Country Planning Act, 1944.* At Caxton Hall, Caxton Street, S.W.1. (Sponsor, TPI). 6 p.m. FEB. 1

Percy Smith, Master of the Faculty of Royal Designers for Industry. *Beauty in Sign Painting and Civic Lettering.* At the Royal Society of Arts, John Adam Street, Adelphi, W.C.2. (Sponsor, RSA). 1.45 p.m. FEB. 7

H. S. Goodhart-Rendel. *The Work of the late Sir Edwin Lutyens.* At 66, Portland Place, W.1. (Sponsor, RIBA.) 6 p.m. FEB. 13

Wing-Commander T. R. Cave-Browne-Cave. *Camouflage for the Concealment of Civil Factories.* (Francis Cobb Lecture). At the Royal Society of Arts, John Adam Street, Adelphi, W.C.2. (Sponsor, RSA). 5.30 p.m. FEB. 14

F. N. Sparkes and A. F. Smith. *The Concrete Road; a Review of Present-day Knowledge and Practice.* At the Institution of Civil Engineers, Great George Street, Westminster, S.W.1. (Sponsor, Institution of Civil Engineers). 5.30 p.m. FEB. 27

Professor E. P. Stebbing. *Erosion and Water Supplies.* At the Royal Society of Arts, John Adam Street, Adelphi, W.C.2. (Sponsor, RSA). 1.45 p.m. FEB. 28

F. Longstreth Thompson. *An Outline Plan for a Region.* At Caxton Hall, Caxton Street, S.W.1. (Sponsor, TPI). 6 p.m. MAR. 1

MALVERN. *When We Build Again.* Exhibition and Film. (Sponsor, TCPA, in collaboration with Messrs. Cadbury Bros.). *The English Town: Its Continuity and Development.* Exhibition. (Sponsor, TCPA). Town and Country Planning Association Conference, Mar. 17. MAR. 10-19

MIRFIELD, YORKS. *The English Town: Its Continuity and Development.* Exhibition. (Sponsor, TCPA). FEB. 25-MAR. 9

SALE, CHESHIRE. *When We Build Again.* Exhibition. At the Young People's Association. (Sponsor, TCPA). JAN. 5-12

STOCKTON. *When We Build Again.* Exhibition. At the Gas Showrooms, Stockton. (Sponsor, TCPA). FEB. 1-14

WORKINGTON. *Town and Country Planning Association Conference.* Speakers, Mrs. Jean Mann and George Bull, Town Clerk, Durham. JAN. 13

The English Town: Its Continuity and Development. Exhibition. (Sponsor, TCPA) JAN. 8-13

NEWS

THURSDAY, JANUARY 4, 1945
NO. 2606. VOL. 101

Though no feature in the JOURNAL *is without value for someone, there are often good reasons why certain news calls for special emphasis. The* JOURNAL'S *starring system is designed to give this emphasis, but without prejudice to the unstarred items which are often no less important.*

★ *means spare a second for this, it will probably be worth it.*

★★ *means important news, for reasons which may or may not be obvious.*

Any feature marked with more than two stars is very big building news indeed.

The waste heat, dispersed by the great cooling towers at DURHAM AND LINCOLN might be used for district heating—Sir Charles Reilly

Professor Sir Charles Reilly, in a letter in *The Times*, says: Talking to an eminent engineer the other day, I learnt the probably well-known fact that the recoverable heat wasted in a great modern electricity generating station is 60 per cent. of the heat given from coal. The great cooling towers, which are the main threat to the views across the river and town of the cathedrals of Durham and Lincoln, are there to disperse this waste heat. Instead, the lost heat might, as in many cities on the Continent in pre-war days and in America to-day, be used for district heating. This provides hot water throughout the towns by means of lagged pipes giving supplies to the houses for heating rooms as well as for general hot water purposes, and in consequence no cooling towers are required. Under certain conditions it might also be possible for the power stations themselves, with their tall chimneys, to be built at some distance from the towns. District heating has been carried out up to six miles from the generating station and a four-mile service is proposed for Coventry to-day. It is interesting to note from articles in the technical Press that the engineer responsible for district heating at Hamburg and other German cities is a refugee in this country. In Hamburg there were over 20 miles of delivery heat distribution pipes in use, and practically the whole of the office buildings and banks in the centre of the city took this supply. At Steglitz a large supply was given to 4,000 dwellings. Such systems are also a great help to smoke abatement, and have been proved to be paying propositions.

From AN ARCHITECT'S *Commonplace Book*

A STATELY PLEASURE-DOME FOR POULTRY. [*From* Sketches of Rural Affairs (*Published under the direction of the Committee of General Literature and Education appointed by the Society for Promoting Christian Knowledge*, 1856)]. The Royal Poultry House in the Home Farm at Windsor is highly ornamented, at the same time that it is perfectly adapted to the wants of the birds. It was built under the immediate superintendence of the Queen and Prince Albert, and consists of a central pavilion, flanked by roosting places, and breeding and laying nests. From this pavilion all the poultry can be conveniently inspected, and at the top of it is an elegant pigeon-house lined with looking-glass, in which pigeons delight to gaze while they prune and dress their feathers. A gentle slope in front of the pavilion is divided, by slight wire fences, into wards or places of daily exercise for the fowls, where they have grass-plots and gravel paths, the latter leading to the entrance of their respective houses. The apartments in this poultry-house are light and airy ; the fittings, temperature, and general economy of the house being carefully regulated with reference to the natural habits of the birds. The nests are made to resemble as closely as possible those which the birds would form in a natural state.

Leith Hill Place, with an endowment of £4,000 has been GIVEN TO THE NATIONAL TRUST by Dr. Ralph Vaughan Williams.

Leith Hill Place, a property of some 470 acres, is close to the summit of Leith Hill—already National Trust property—and about five miles from Dorking. The house, which will not be open to the public, was at one time the home of Mr. Richard Hull, who built Leith Hill Tower about 1765. In 1847 it was acquired by Mr. Josiah Wedgwood. Mr. Wedgwood was a cousin and brother-in-law of Charles Darwin, who was a very frequent guest and studied there when preparing some of his books. From Mr. Wedgwood the property came by inheritance to Dr. Vaughan Williams's late brother, who made it his home. At Dr. Vaughan Williams's suggestion it will now be let to his cousin, Sir Ralph Wedgwood. The estate also includes a small farm and some cottages, but for the public its great interest lies in the woods, which, with part of the park, will be open to the public. They command extensive views over the Weald to the South Downs.

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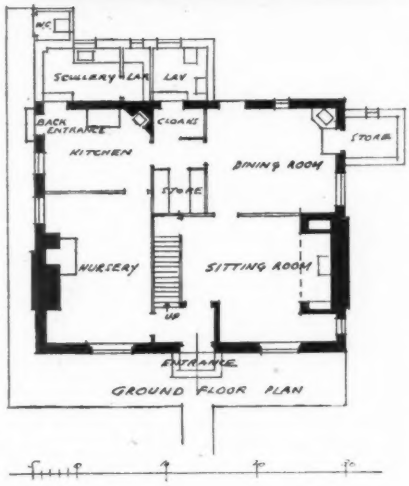
Nine Royal Academicians: Reduce this eighteenth century house to 900 square ft. and add popular fittings and it will be far BETTER THAN MOST OF THOSE ERECTED AS EXPERIMENTS all over the country.

The Royal Academicians in a letter in *The Times* write: SIR,—It is remarkable that, after all the discussion about housing, the experimental houses themselves at Northolt and elsewhere do not exhibit one example that is worthy of our building inheritance. The point has been stressed recently by a contemporary, but it is of such importance that we ask you to give it your wider publicity, with an example (with photograph and plan) of what was done all over England in the eighteenth century and earlier. In this typical small house—the house of the common man—you find convenience, elegance, and economy. It is to be found in slightly varying forms, and is built of the local materials that each district affords. Reduce this house to the 900 square feet of the Dudley report, and add the popular fittings by which alone a house is judged by the public at large, and it will be far better than most of those which are being erected all over the country as "experiments." Modern construction and prefabrication must enter into the question, but let us have the best possible house first, and subordinate the way of doing it to the thing that is to be done. We possess the finest tradition of domestic architecture in the world, and it is the development of this tradition that we so urgently desire to see continued in the national building effort that is now in active preparation.—We are, Sir, yours obediently, Alfred J. Munnings, Giles Gilbert Scott, Herbert Baker, W. Curtis Green, Arthur J. Davis, W. McMillan, A. E. Richardson, Gerald Kelly, E. Vincent Harris, Royal Academy of Arts, Piccadilly, W.1.



Nine Royal Academicians : Reduce this eighteenth century house to 900 sq. ft. and add popular fittings and it will be far better than most of those erected as experiments all over the country (see news item above). On the first floor are three bedrooms, two with fireplaces, bathroom and separate w.c.

★★

His Majesty the King, on the recommendation of the RIBA, is awarding THE ROYAL GOLD MEDAL for 1945 to Victor Vesnin, President of the Academy of Architecture of the USSR and architect of the famous Dnieper Dam.

The Royal Gold Medal is annually conferred on a distinguished architect or man of science or letters, who has produced a work advancing the knowledge of architecture. Victor Vesnin is one of the senior and most distinguished members of the profession in the Soviet Union. He was born at Yurev on the Volga in 1882, and graduated in the Civic Engineers' Institute in St. Petersburg in 1912. During the first World War he was the designer of a number of war factories. In 1930, he was appointed Chief Architect of the Dam and Power Station on the Dnieper and of the neighbouring city of Zaporozhye. Subsequently he was architect of several other hydro-electric power stations on the Volga. Early in the great period of Soviet reconstruction Victor Vesnin, in association with his brother, Alexander, was appointed architect of many important buildings. Between 1923 and 1930, when he started the Dnieper Dam Works, he built the Palace of Labour, Moscow (1923); the Arcos Building, Moscow (1924); a large store in Krasnaia Presnia, Moscow (1927); and one of the famous Caucasus Sanatoria at Natzesta (1927). He won first premiums in many competitions, including the one for the Krahkov Theatre; one of the largest theatre projects in the USSR; the Palace of Culture for the Stalin Automobile Works, Moscow; the Government Centre, Kiev; the Premises of the People's Commissariat of the Hearz Industry, Moscow; and the Second House of the People's Commissariat, Moscow. Work on this was in progress at the start of the war. Victor Vesnin is also architect of the Voroski Cinema, Moscow (1930), of the Palace of Culture of the Proletarski District, Moscow, and of the Pavletskaia Metro Station. When the Academy of Architecture was founded in 1939 Vesnin was elected an original member and the first President, an office he has held ever since. In 1943, he was elected a member of the Academy of Sciences of the USSR. Since 1937, he has been a Deputy elected to the Supreme Soviet.

The New Minister of Works

Thirty six year old Mr. Duncan Sandys, who succeeded Lord Portal as Minister of Works last month, is the youngest member of the Cabinet. At the time of his appointment he was Parliamentary Secretary to the Ministry of Supply, a position he had held since 1943. For the past nine years he has been Conservative Member of Parliament for the Norwood Division of Lambeth. Born in 1908, the only son of the late Captain George Sandys, formerly MP for Wells, and Mildred, daughter of Duncan Cameron, of Christchurch, New Zealand, he was educated at Eton and Magdalen College, Oxford, entered the Diplomatic Service in 1930, and served at the Foreign Office and HM Embassy in Berlin. In 1935 he married Diana, daughter of Mr. Winston Churchill, the Prime Minister, and has one son and two daughters. In 1940 he served in the Royal Artillery, TA, in Norway, in 1941, was promoted Colonel, and from 1941 to 1943 was Financial Secretary to the War Office. Lord Portal gave up his position as Minister of Works at the request of Mr. Churchill. An exchange of letters* showed that Mr. Churchill asked him to resign so that an MP could take his place and be able to make statements direct to the House of Commons when housing and bomb questions are raised.

*A.J., November 30, 1944, page 391

★★★

The King's NEW YEAR HONOURS list, the first instalment of which was published last Monday, includes the following

Viscount: Lord Portal, Minister of Works, 1942-1944. *Knights Bachelor*: Leslie Patrick Abercrombie, Professor of Town Planning, University of London; Allan Campbell Macdiarmid, Chairman and Managing Director, Stewarts and Lloyds, Ltd.; Reginald Edward Stradling, Chief Adviser, Research and Experiments Department, Ministry of Home Security.

The Ancient Monuments Division of the Ministry of Works is carrying out the SALVAGE OF HISTORIC BUILDINGS damaged by enemy action—or threatened, in certain cases, by over zealous demolition.

The salvage is being carried out with the co-operation of the Ministry of Home Security and local authorities. An account of the work already done was given to the Society of Antiquaries by Mr. B. H. St. J. O'Neill, of the Ancient Monuments inspectorate. Discoveries have been made in the course of preservation work. At Exeter a fragment of the Church of St. George, pulled down 100 years ago, was laid bare by fire and water, and a Saxon doorway revealed, incorporating pieces of Roman columns. At Southampton a twelfth-century chimney has come to light, the only complete Norman chimney in the country. At Winchelsea part of the mediæval archway to a vault has been uncovered under a house of later date. Successful salvage work includes the preservation of the tower of St. George's Church, Canterbury. This was threatened with demolition as dangerous; when it was found that four days would be needed to pull it down, the Ancient Monuments Division asked for four days to make it safe, and this was done.

★

To demolish any bombed City of London Church which is an acknowledged work of art would be AN ACT OF VANDALISM, says the Bishop of London's Commission

In the interim report of the Bishop of London's Commission on City Churches, proposals are made to restore churches in the City of London not completely destroyed by bombing, to amalgamate some parishes and to erect three social centres on bombed church sites. The Commission's views are:—*Bombed Churches*: To demolish any church which is an acknowledged work of art would be an act of vandalism which would shock the conscience of the country, if not of the world. No Wren church not already destroyed or damaged beyond the possibility of satisfactory restoration should be removed, except in a case of most urgent necessity. All the churches which survived the Great Fire of 1666 should be retained as far as possible. Of the City's 45 churches, 28 have escaped serious damage by bombing. Half of the others should be restored. *Social Institutes*: One of the sites should be used for Cathedral purposes. The sites of four or five churches which cannot be restored should be sold and part of the proceeds used to equip and endow three institutes for church social work among young City workers.

EMPIRE BUILDERS

ARE we living in a world of dreams, or are they? Does the development of modern architecture run, as our Giedions, Shands and Pevsners have taught us, from Paxton and Morris to Voysey and Mackintosh, on to Perret and Frank Lloyd Wright and Behrens, to Gropius and Corbusier and so back to England? Or is Sir Herbert Baker, and, with him, the other knighted architects and RAs, right in maintaining that "the eternal principles of the ordered beauty of classical architecture" should still be our guiding lights and that "there can be no higher praise" than to say of buildings that they vie "with the vaulted halls of the Roman Baths"?* What judgment will history pass? It may all happen that a thirty-seventh edition of the indispensable Banister Fletcher will, in a hundred years' time, give just as much space to both camps. In solid stone and mortar Sir Herbert Baker's achievement can indeed not be forgotten. As a historical document, moreover, it is of the highest significance, whatever its æsthetic qualities. Early in life he met Cecil Rhodes and was captivated for good and all by Rhodes's fascinating personality and his vast ideals. He has been the Empire architect *par excellence* ever since. Lutyens's New Delhi is grander and stronger than Sir Herbert's. But in Lutyens's career this was only one episode, though the most princely one. Sir Herbert went from Rhodes's House to the Rhodes Memorial, to the Pretoria Union Buildings, to the Secretariats and the Council Chamber of New Delhi, to Nairobi and the War Cemeteries, and then, when he had settled down in London for good, to South Africa House, India House, the Eugenic Society, London House for Dominion students and Rhodes House in Oxford.

What an enviable optimism in all that—optimism regarding the Empire, and optimism regarding his own achievement. Sir Herbert quotes freely what others have said about his work: that the rotunda in Rhodes House is "the most inspiring place in Oxford" (Sir Michael Sadler), that Church Hall was the best large hall Dr. Fisher had ever spoken in, that the Rhodes Memorial is "the best thing of its kind since the Greeks" (Lord Curzon), and that the Memorial Cloisters of Winchester College are "as near perfection as human work can be" (Kipling). Sir Herbert adds on his own that his friendship with Charles Wheeler, the sculptor, "may be compared to that of Brunelleschi and Donatello."

However, it is not fair to take such sayings out of their context of equal optimism: "Immortal glory . . . will be the outcome of this war"; public school training continues "the traditions of the training in chivalry of the knight's castle with the education in scholarship of the monastery." Et cetera, et cetera. And reading of Sir Herbert's life no one can be astonished at this undaunted Empire optimism. He was

* These and the following quotations are from Sir Herbert Baker's *Architecture and Personalities*, (Country Life, 1944, £2 2s.)

and is the friend of Rhodes, Milner, Kipling, Smuts, Lawrence of Arabia. To his circle little was heard of the warnings of race troubles in South Africa and, worse, in India. To him his New Delhi buildings will still one day be the Acropolis of a united India of Dominion rank.

And—to resume the impartial bird's eye view of the thirty-seventh edition of Banister Fletcher—this imperial optimism of Rhodes has certainly found mighty followers outside the Empire. Rhodes dreamt of a Hervön, a Via Sacra, a Temple of Peace. These are exactly the sort of jobs which architects were asked to provide first by Mussolini (and Sir Herbert praises their " imagination and dignity "), and then by Hitler and Stalin. You may call them huge Halls of Remembrance, monuments on hill tops, and Holy Ways Socialist Realism, or *Romanità*, or *Realpolitik*. They are the legitimate outcome of what Wren said : " Architecture has its political Use : publick Buildings . . . make the people love their native Country, which Passion is the original of all great actions in the Commonwealth."

So where are we ?

The Architects' Journal
War Address : 45, The Avenue, Cheam, Surrey
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NOTES & TOPICS

THOUGHTS ON MOBILITY

It has been said that a policy of full employment (from the long-term point of view, what a fatuous and futile objective) is not practicable unless a certain proportion of workers are prepared to move to the places where jobs are available. Mr. Dalton has told us that the Government's policy will be to bring the jobs to the workers in all possible cases. But this statement implies exceptions—indeed, they are inevitable—and it would be foolish not to realize how unpopular the exceptions will be during the next decade.

*

One says the next decade because it is during that period that the industrial changeover and re-settlement is most likely to call for migration, and few new neighbourhood units will be in full working order before its end. The probable desire of Service men and women and civilian war workers to have no more trailing around has been written about often enough. And the housing situation is not likely to encourage the few exceptions. But I have not seen anything written about the effect of wartime moves on younger children. I am sure it is bad.

*

Two children, aged 4 and 5, with whom I stayed recently had moved three times in the past two years. Their memories of people and places further back than the last move were fragmentary and the lack of continuity obviously was a worry to them. The thing these children seemed to need was to stay in one place of comprehensible size, and for preference in the same house, for the next five or ten years.

*

If this impression is correct and generally applicable to such children, a problem at least as serious as that raised by the interruption of formal education faces the Board and the Ministry of Health—and the worker with young children who is asked to migrate. What is more, if it is a real advantage to have spent the first fifteen years of one's life in one place with friends and relations round the corner, then it is one of the few which a child can acquire free of charge to its parents, and poor parents thus have a very valid additional reason for wanting to stay put.

*

When this argument is added to the many others against migration over any great distance, it seems justifiable for the Government to go to great lengths to avoid its becoming necessary. We can at least be sure that those lengths will be measured, with the care and the publicity given to the compensation standards in a Town and Country Planning Bill.

REMEMBER RAVENNA

According to a preliminary report, the main monuments of recently captured Ravenna—S. Apollinare, S. Vitale, and the Tomb of Galla Placidia—are stated to be intact or only suffering from superficial damage. The mosaics, which are the chief glory of these buildings, were bricked up when Italy entered the war, and their condition is unknown, but it seems probable that they, too, have escaped serious injury.

*

Let us hope the news is as true as it is good. For Ravenna, besides being architecturally one of the richest towns in Europe, is also a queer haunted place, filled with that remote sadness which seems to hang about marshland towns in every country and lies in their streets as thickly as the miasma from the canals and salt-flats which surround them.

*

Some ten years ago I spent a lonely week there, driving along the white dusty roads in a little Victoria, my five-foot rod, notebook and inexpertly loaded camera bouncing beside me on the seat. Above my head swung the wildly dancing fringes of a grubby silk awning, and dust formed a pale bloom on the polished leather cushions.

*

In contrast to the afternoon glare, the churches, deserted and cool, were almost dark, and photography within their walls needed even more patience than drawing. Perhaps nobody but the most inexperienced student would have attempted to record the glow and

sparkle of those magnificent mosaics, but even a temporary incarceration and questioning from the secret police (a plush-violet trilby hat and a mouthful of metal teeth), and constant suspicion from the local constabulary, did not succeed in deterring me from trying, or in spoiling one minute of those miraculous autumn days.

SPINNING GALLERIES

Mr. E. Richardson, a Journal reader, has sent me the photograph reproduced below. It shows an old Spinning Gallery at a cottage at Low Hartsop, Ullswater, a feature in cottage architecture which must be a rare curiosity. Indeed, few can even have heard of it.

*

"There are three cottages with these galleries in this tiny village," writes Mr. Richardson, "one of which is of stone, and is reached by an outside staircase. It appears from what I learnt in the district that these galleries were built elsewhere, but I have not found any remaining except in this one village. Apparently the cottages are so dark inside that to see to spin indoors was impossible, and galleries were used because they gave protection from the weather, and yet admitted light."

DENISON *v.* BECKETT

Mr. J. R. Kell, in his letter to the Journal published on December 14 last, states that I was wrong to attribute the design of Big Ben to Mr. Denison, later Lord Grimthorpe, and he points out that Lord Grimthorpe was previously Sir Edmund Beckett, Q.C.

*

The truth is that both I *and* Mr. Kell are right. Lord Grimthorpe's full name at one time was Denison Beckett, but he later dropped the Denison. I have been confirmed in this by someone who is sure of the facts—Lord Grimthorpe himself.

ASTRAGAL

An architectural curiosity, the spinning gallery of an Ullswater cottage. See Astragal's note.

LETTERS

Edward D. Mills, A.R.I.B.A.

F. J. Samuely

Wilfred J. Smith, L.R.I.B.A.

A. O. Jones, A.I.Struct.E.

Protective Architecture

SIR,—The article by John Gloag, entitled *Protective Architecture*, opens up a field of discussion which should attract architects of all shades of opinion.

Are we to plan and build after the War in preparation for future wars, or are men and women so sick of war that they will insist that war in the future shall be impossible?

John Gloag's article suggests the first alternative; if civilization is to survive, the second alternative is the only possible one. Modern weapons, flying bombs and rockets, have made this war a civilians' war, and adequate protection for the entire civilian population (unless we envisage housing everyone permanently underground) is absolutely impossible.

The nightmare possibility of future towns similar to those depicted in the film, *The Shape of Things to Come*, should in itself be sufficient incentive to all constructive thinkers (and architects are surely in this category) to strenuous efforts in the cause of lasting peace. Of what use are our London, Coventry, and Portsmouth plans, if the future is only to bring bigger and better wars? While it is readily conceded that this war will be no more successful than its 1914-18 predecessor in ending all wars, we hope shortly to have the opportunity of conducting a peace to end war. Churchill's pre-war outburst, "War has now become cruel and squalid—to Hell with it," is no less true after 5½ years of organized cruelty than it was in the days of imita-

tion peace when the words were spoken.

John Gloag's suggestion that the Architectural profession and Building trade should now be mobilized to make preparation for the next world war must strike many readers as incredible. Our job is to add our strength and support to those who plan for peace.

"Architecture for protection" is presumably similar to the Nazi monstrosity illustrated at the head of John Gloag's article—if this is so all our schemes for even lighter and brighter towns and buildings may just as well be abandoned now before they leave the drawing board.

The old tag, "*Si vis pacem, para bellum*" was surely disproved even before the war, and yet we are invited to believe that it offers a hope for the future. The only hope for the future of mankind is a wholehearted return to a world run on the basis of mutual understanding and trust, rather than suspicion, intrigue, and secrecy.

I hope other JOURNAL readers will take the opportunity of airing their views on this matter of vital importance in the JOURNAL'S correspondence columns.

As a postscript: Edward A. Pinto's suggestion concerning afforestation schemes as war memorials for the fallen in this war is an admirable one, and should be followed up, but his suggestion that such memorials would always be in the last resort a source of munitions in future wars is even more incredible than John Gloag's suggestions. Why not demolish the Cenotaph now and use the rubble for hardcore on the latest R.A.F. aerodrome, or turn the brass tablet on the Unknown Warrior's tomb into shell caps?

Trees as war memorials by all means, and places of rest for disabled ex-service men . . . but let the trees stand for ever as a permanent condemnation of the incredible stupidity and folly of our so-called civilization.

Hornchurch, Essex — EDWARD D. MILLS

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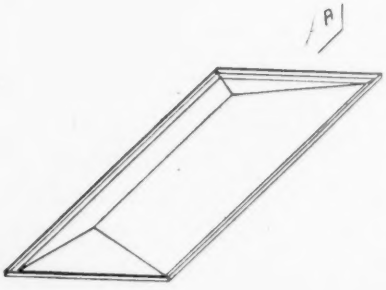
Section AA



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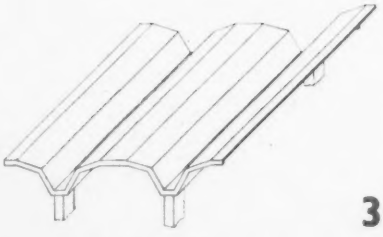

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See letter from F. J. Samuely

Shell Concrete Construction

SIR,—I have read with great interest the article on shell concrete construction, by Dr. Hajnal Konyi. I think that it is very valuable for architects to appreciate the possibilities of the shell construction, and I was somewhat astonished by the letter published in the Journal claiming that such construction can be carried out only under licence.

I myself designed buildings on the shell construction in reinforced concrete, as long ago as 1919, and in laminated timber in 1930. In fact, the old Egyptians were quite aware of the principles of this type of construction, although they were not conversant with the intricacies of the calculation, or with the use of modern materials. During the late 'twenties, the general principles of a calculation for this type of construction were developed by Dischinger and Finsterwalder, and published in this, as well as other countries. Some time later, and after such constructions had been published here, a patent was granted on this type of construction, and apparently nobody queried this, but this patent can, of course, not be enforced. To make quite sure about this point, in 1937 I informed the then patentee that I intended to design two buildings on this principle, and he, of course, never objected. I understand that a similar procedure was followed in other cases, *e.g.*, buildings carried out, and published in *The Architect and Building News* on February 4, 1944.

The two buildings of mine referred to are:

(1) A ribless dome for the foreshore development at Folkestone, with an overall span of 110 ft.

(2) Roof over store building for a paper factory in Bristol (cylindrical type), see Fig. 1.

There is one thing I should like to add to Mr. Konyi's explanations. Although the shell type of construction, with curved roofs, is statically the most logical method of spanning large areas, it is possible to vary it and replace a vault or a dome by a number of planes, just as arches can, in many cases, be replaced by rigid frames. In this way simplification of shuttering and such accessories as roof covering and roof lights is effected, and quite a number of additional forms are made possible for the cost of somewhat heavier concrete and extra reinforcement. Two applications of this type are shown in Figs. 2 and 3. Used in this way, the construction lends itself to the application of other materials, *e.g.*, steel, either as sheet metal or latticed construction, easily erected and covered with light roofing.

London — F. J. SAMUELY

The Registration Council's Retaining Fee

SIR,—The increased retention fee now required by the Registration Council is a further demand on members of the profession, and from the information given it is not clear why an addition of 100 per cent. is required.

The Council, it is true, draws attention to deficits incurred in previous years, due to some extent to tribunal fees and expenses not within their control.

After making allowance for these items and the provision for scholarships, it is pertinent to enquire why the Council cannot work within the remaining income in just the same way as the persons who provide the wherewithal, who, it should be pointed out, are generally in receipt of reduced incomes due to war conditions.

The Council state that they have power to review the position at any time, and it is to be hoped that the retention fee will be reduced in the not too distant future, although the tendency of professional bodies generally to require increased subscriptions does not incline one to be optimistic.

Stanmore — WILFRID J. SMITH

MOW Standard Factory

SIR,—Whilst agreeing with Mr. R. Blyth Winter that building factories with the lattice-girder type of roof is not necessary in every case, it would be a pity to discourage its use where it would be an advantage. For those requiring wide open spaces the full length of the buildings, and spans up to 100 ft. or more, without stanchion obstructions, it will be a relief to know that it will not be necessary to add 66 per cent. to the cost of steelwork to obtain this advantage.

For a factory of the size quoted (50,000 ft. super) the additional weight would be about 40 tons, which reduces the extra cost to not more than £1,400, at £35 per ton, which might not be too high a price for the advantages gained.

Stourbridge — A. O. JONES

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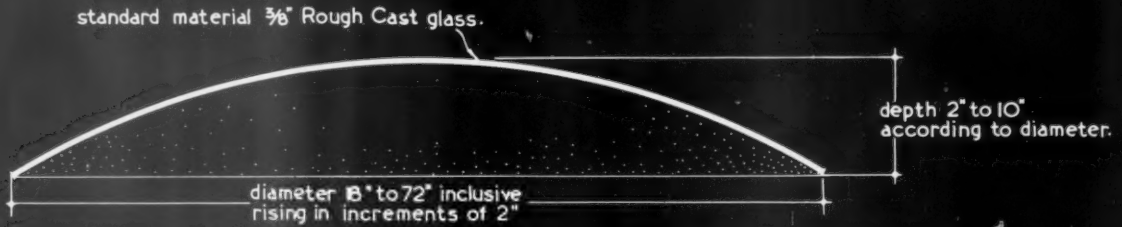
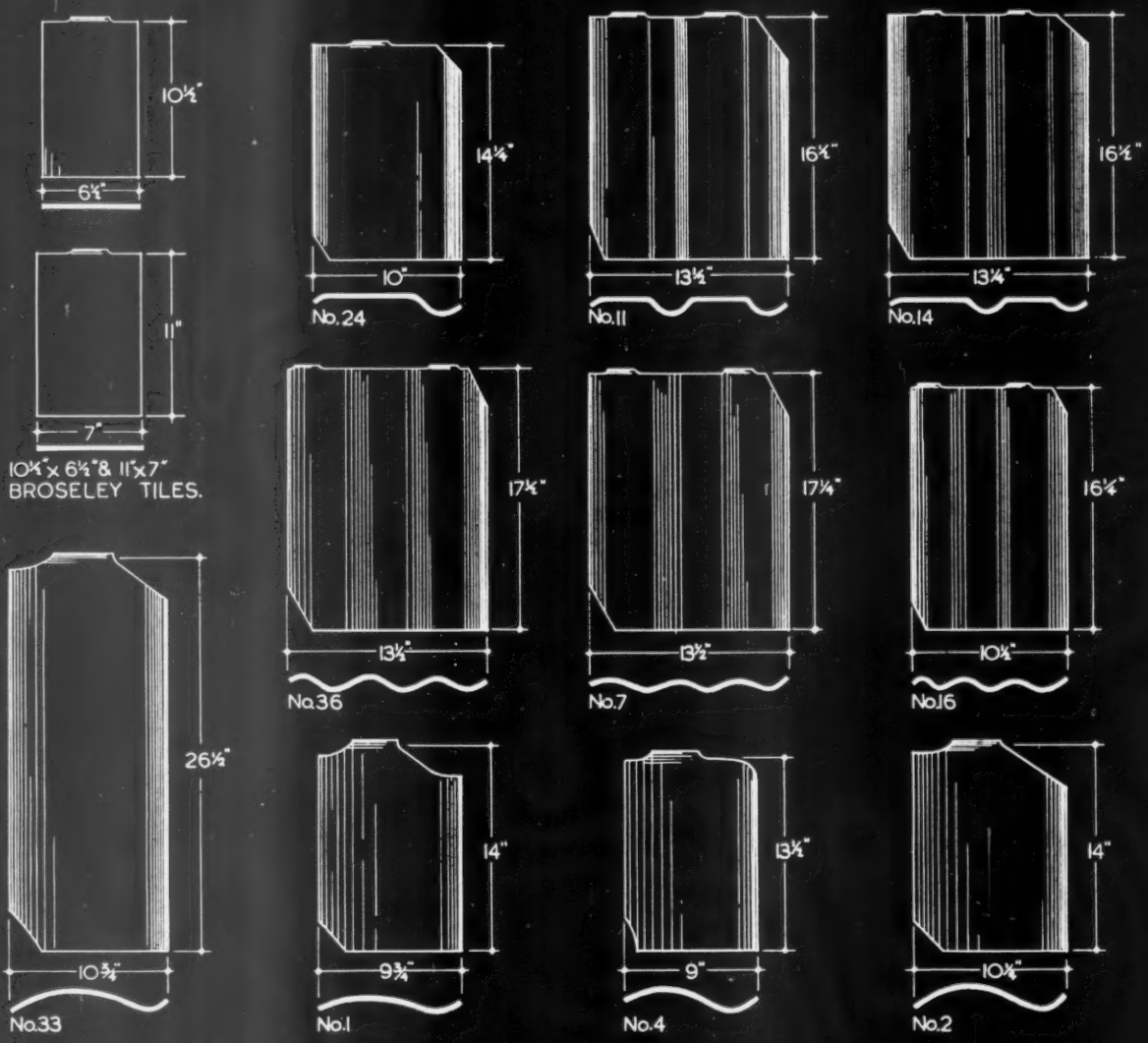
BENT GLASS: SPHERICAL DOMES AND ROOFING TILES



PROPORTION AND STANDARD SIZES OF SPHERICAL DOMES — circular on plan.



ELEVATION AND SECTION OF TYPICAL EXAMPLES OF GLASS ROOFING TILES.
STANDARD THICKNESSES: 1/8" · 3/16" & 1/4".

Information from Chance Brothers Ltd.

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INFORMATION SHEET

• 952 •

GLASS: No. 19

Subject: Bent glass Domes and Tiles.

General:

This Sheet is the nineteenth of the series dealing with glass and glass products, and describes bent glass Domes and bent glass roofing Tiles.

Spherical Domes:

Description: These are shallow Domes circular on plan and are formed by bending flat glass over a mould. They are usually made $\frac{3}{8}$ in. Rough Cast glass.

Standard sizes: From 18 in. diameter to 72 in. diameter inclusive, rising in increments of 2 in., with depths of from 2 in. to 10 in. inclusive, according to diameter.

Larger sizes than standard are available, but these have to be specially ordered.

Fixing: There is a variety of methods of fixing: by means of copper clips, etc.

Applications: For illumination through flat-roofed buildings.

Tiles:

Description: These are formed by bending flat glass over a mould. They are usually made in Rough Rolled or Rough Cast glass in thicknesses of $\frac{1}{8}$ in., $\frac{3}{16}$ in. and $\frac{1}{4}$ in.

Standard sizes: A range of standard types is available. Typical examples are shown on the face of this Sheet. Special types can be produced to order.

Applications: For inter-mixing with pan-tiles and ordinary roofing tiles to introduce daylight through pitched roofs.

Previous Sheets:

Previous Sheets of this series on Glass are Nos. 914, 917, 919, 922, 925, 927, 929, 932, 937, 938, 940, 945, 946, 947, 948, 949 and 950.

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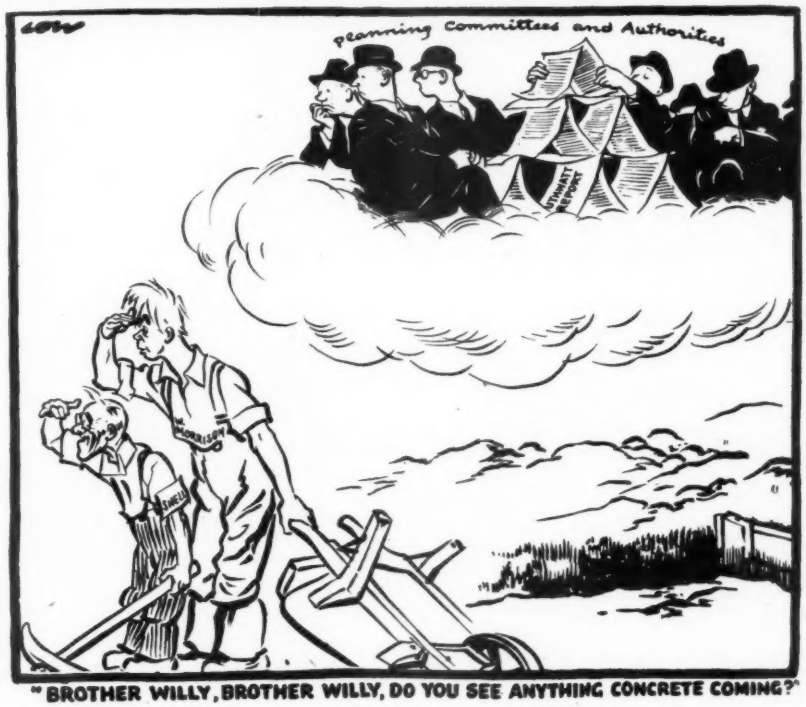
PHYSICAL PLANNING SUPPLEMENT



Evening Standard

"BROTHER WILLY, BROTHER WILLY, DO YOU SEE ANYTHING CONCRETE COMING?"

Low's cartoon on the right asks a question to which many planners would like an answer as the new year opens and legislation lags ever further behind the plans. It provides a fitting heading to an article which describes what may happen if there is no answer forthcoming. Although it is true that "the projection of ideal goals is, with reference to the future, the counterpart of an intelligent commerce with the past," this should not overshadow the importance, for the same purpose, of an intelligent commerce with the future. We present therefore, by kind permission of the editor of Horizon, with drawings specially done for the Journal by Hugh Casson, a glimpse into a possible part of England's future.

TARGET FOR TOMORROW?

The great Dictator was growing old: for thirty years he had enforced his will on England, welding his people into as many shapes as a ship's steward can fold napkins. They had bled in wars, they had perished from overwork, they had performed like a well-drilled guard of honour, but in spite of their inexhaustible servility, their boundless capacity for suffering, they were not really happy; the birth rate went steadily down. Boredom suffused the mind of the great Dictator like a galloping dermatitis. On such days there was only one man whom he could bear to see, Lord Cavalcade, his *maître des plaisirs*.

The vizir entered in the uniform of an Admiral of the Blue.

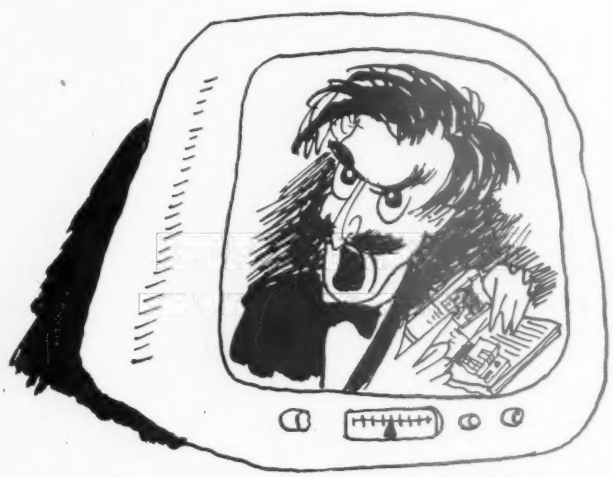
'Noel, I gottem again.' 'Oh bad luck, sir!' 'It's the British people. —— them! What can I do with 'em now?' Sir Noel also was a prey at times to ennui. I'll risk it, he thought. 'There is one experiment you have never made, sir. War, pestilence, famine, the eighty-hour week—all that's old stuff. Have you ever thought of Beauty?' 'Wodgermean?' 'This island once had a reputation for being beautiful—unspoilt scenery—eighteenth-century towns, lovely villages, Elizabethan manors—the clean fresh England of the Georgian aquatints.' 'Aquatints?' Sir Noel showed him one. 'Righto,' said the Dictator. 'I'll try anything once. Go ahead. What'll you need?' 'A handful of artists and absolute power for a year.' 'You have it Karblonsh.' The Dictator reflected. 'Arfamo, what about the International aspic? Will the Empire mind?' 'The Empire now consists of Libya, Abyssinia, the Beach-head, and, somewhere in the Indian Ocean, Rodd Island; I think we can take their consent for granted.' 'And the Great Powers?' 'They won't interfere. Too busy with the Tunnel.' The Tunnel, begun simultaneously from Duluth (Iowa) and Krasnoyarsk, was to provide a rocket route from North America to Siberia, through the centre of the earth itself, and so lessen the congestion in the air. 'A triumph of global engineering which will put the Tundra in direct communication with the Dust-Bowl,' said Sir Noel with his famous dead pan. But the Dictator was already napping.

Sir Noel at once got to work. He combed the mines and labour camps for a few surviving artists and men of taste; advisers and civil servants in the ill-starred governments of Butlin and Beveridge. With great secrecy in spite of cynical comment from the envious Chief of Police some Betjemanites were let out; long-haired, red-eyed intractable prisoners who remembered Grigson and had marched with Piper. When the conditions of their release were explained to them a look

. . . . some Betjemanites were let out

of incredulous fanaticism filled their eyes. 'He' would be revenged at last!

That night the wireless gave out the terrible announcement: 'Are guilty: every house built since 1840, and all those who live in them. Commissioners will examine as from today any doubtful cases and all such houses will be destroyed within one calendar month. This order applies as well to all towns built since 1840, and only houses with proven æsthetic qualities, airpδrts, and factories connected with essential services are exempt.' The television screen threw up the picture of a wild-eyed screaming announcer which the listeners, though it was a breach of regulations, were quick to eliminate. That week the Regional Commissioners began their work. Scarborough was spared because of its associa-



. . . . a wild-eyed screaming announcer

tions with the Sitwells, Wigan with Orwell, but the Commissioner for Southern England was an extreme Betjemanite who remembered the master's curse on Slough, the closing down of the Barnstaple-Lynmouth light railway, and other sacrileges. He refused to spare Reading for the sake of Wilde and Rimbaud, Bournemouth for Verlaine, or even Westward Ho for the sake of Kipling and Tarka the Otter. Middle-aged veterans of the Fourth Great War were called up from their second-hand businesses and preparatory schools; joyfully they saw their 'kites' again and briefing officers for the Southern Zone showed them their 'piece of cake,' 'Bournemouth! What a target!' Swindon—Woking—Southampton—Brighton—'Except for the Front'—and that slab of grimy South Wales smeared on the edge of Exmoor—sunny Ilfracombe! 'Wizard' they shouted, 'for England, Home and Beauty.'

In spite of such threats the British were unexpectedly stubborn and only a few obeyed the order to leave their homes and take up temporary quarters in luxury liners, mystery cruisers, and pre-1840 gaols and mental institutions in 'safe' areas like Bath, Clovelly, Burford and King's Lynn. The Corporation of Bournemouth made a pathetic appeal for their city 'so fond of music—so careful of the Chines.' Macaulay's praises saved a large part of Torquay, and London received a special privilege of keeping its buildings up to 1860. In the Tudor hotels, pubs and road-houses, half-timbered resorts for the half-plastered, false optimism reigned. 'They won't do anything to us—besides the warming-pans are genuine.' A month later the Commissioners acted. Bombs fell day and night on Bournemouth and Brighton, Southampton and Slough, Reading and Woking, Ilfracombe, Paignton, Weston-super-Mare; avenue by avenue, terrace by terrace, grove by grove. The Dictator panted into the microphone: 'If you bastards aren't beautiful we're going to bomb you until you bloody well are.' The American papers almost forgot the Tunnel. 'Merry England gets a

. . . . bombs fell day and night

facial,' they screamed, and then fell to speculating, as before, on how the immense energy below the earth's crust could best be employed.

After a year's hard bombing all the post-1840 towns had disappeared from the map. Aldershot and Camberley were open heath, Southampton a small winter resort; the New Forest ponies grazed over Bournemouth, Slough was a haunt of the great crested grebe, Woking a sandy birch-forest, and the sea coast an unspoilt wilderness. The red deer roamed over Ilfracombe and the scholar-gipsy was seen again in Oxford. Country houses had now been deprived of their Victorian additions, and the landscape of England was re-

. . . . Aldershot and Camberley were open heath

vealed in all its planned untidiness as if it were an eighteenth-century nobleman's deer-park. 'I wonder if we shouldn't have gone back to Rufus,' said the Dictator. 'Why?' asked Lord Cavalcade. 'This is authentic enough. Except for the planes, the telegraph poles, the war memorials, the pylons, the arterial roads, the airports and the essential factories, we are back in Ackermann's England: this is our country as it was meant to be.' He was circling slowly round in the

. . . . back in Ackermann's England

Dictator's helicopter. 'Look at that wide curving street with the pale green and cream Georgian houses and the fields beyond—that is a country town—it used to be 'town country' a year ago. And that village there with its warm church tower, and its golden manor—breath-taking! and those downs without a house on them—what a skyline!—and over there where those two old mussel-gatherers are walking—that used to be the Palace Pier! This is the country that Blake and Jane Austen loved, where Constable and Samuel Palmer painted, where Cobbett rode and Dr. Syntax ambled, an agricultural island with a few local industries—there is the lace factory at Tiverton. It's as lovely in this long May sunset as it has ever been.' 'All the same,' grumbled the Dictator, 'there's something wrong. It's the people, —— them.' 'Yes, you're right: it's the people.' The Chief of Police, the third occupant of the plane, was speaking. 'You forgot about them. What made Regency England, 1840 England, so beautiful? I will tell you. Its architecture represented its beliefs. It believed in itself and in its harmonious relation to nature: the population was neither large nor small, the ecology was correct. Our Georgian architecture, so graceful, so classical, so airy, was the last vision of humanism. And the nation was young: its beauty was in its power, in its hope, in its prospects, in its magnificent rôle as arbiter of the nineteenth century which lay ahead. What prospects have these people got? More than half of them are over fifty: in the casualties (though reduced of course to a minimum by precision bombing) another three million have perished. Those who survive believe in nothing except nicotine and alcohol. Of what use to them are town halls and churches? The architecture of a culture is the outward expression of its spiritual health.' 'You talk like a Betjemanite,' said the Dictator. 'Come down a little lower then.' The helicopter descended over the blistered ruins of Brighton. Crowds were bustling about like ants. Tiny posters could be seen: 'Acacia Avenue.' 'Ready soon.' 'Desirable residence.' 'Old Tudor Teas.' 'Nell Gwynne's cottage.' 'Balmoral.' 'Kosy Kar-wash Kafé.' 'Madame Desdemona, clairvoyante.' Mysterious bubbling noises came from the centre of the crowd. 'My God,' cried Cavalcade. 'They've got hold of a concrete-mixer.' A new hoarding faced them: 'Buy now.' 'Site for Bungalow Town.'

The Dictator was speechless. The helicopter returned to Downing Street. 'Blast the whole bloody lot.' Cavalcade felt for certain that his last moment had come. 'Still it was fun while it lasted,' he ventured. '—— you,' replied his master. 'Three million lives—we can ill afford them,' remarked the Police Chief. 'Eddication—that's what them bastards need. Why in hell didn't you think of it, Admiral,' roared the Dictator, his face mottled with anger. 'You'd better go back to jug with the Betjemanites.' But a message was handed in. 'Terrible explosion of natural gas. Tunnel wrecked. Twelve million workers buried.' The Dictator smiled again. 'Never mind, Noel,' he grunted. 'It seems we all make mistakes.'

Lord Cavalcade backed out. Once safely in the passage he put on his cocked hat, took a quick look at himself in the glass, straightened up to his reflection, and saluted. His sword clattered as he marched briskly down the ceremonial stairs.

PLANNER'S SCRAPBOOK

CROWTHER ON PLANNING

An interview reported in *The Architectural Forum*, October, 1944.)

U.S. planners, lost in a thicket of high urban land values, have found Great Britain's rebuilding proposals breath-taking. Has England's older economy found a way out of the tangle? Geoffrey Crowther, editor of Great Britain's most influential journal of opinion, the 100-year-old *Economist*, thinks that there is good hope for substantial land use reform within England's existing legal and financial framework. But Crowther, in a special *Forum* interview, reminded that Britain's present coalition government has not yet displayed much evidence of getting down to business on specific ways-and-means. **Meantime, "a central set of fanatics" bent on radical changes in land use threaten to wreck useful, if compromise, legislative steps in the right direction.**

"The rosy glow of utopian thinking about land use does more harm than good," Crowther said. "Those planners who would, for example, have half of London moved out have not told us how they propose to accomplish this. Are we to write a letter to Mr. Smith of Bloomsbury and tell him to go and live in Manchester. Members of Parliament are briefed by all sorts of impractical people who have small knowledge of the complexity of existing property rights and financing necessities. The recent refusal of Parliament's Labour members to approve a useful small bill for acquiring the land to rebuild bomb-damaged and slum areas because the whole system of land planning has not been worked out is an example of such impractical thinking."

Opposition to this bill, now being revised in Parliamentary committee, was bolstered by local authorities who felt that the national Treasury should be called on for more substantial help than was proposed. This controversy has, of course, its counterpart in U.S. arguments over federal aid for urban redevelopment. **"Plymouth's excellent rebuilding plan," Crowther said, "calls for a large part of the cost to be paid by the central government. There is a good deal of feeling that no large amount of national funds should go into special amenities for the people of Plymouth. On the other hand, it wasn't Plymouth's specific fault that it was bombed. This kind of problem will, in the last analysis, be a matter of hard bargaining between the cities and the Treasury."**

One big thing Britain has learned from the war and from the 20 years of "depressed areas" that followed World War I is to think less about the mobility of labour and more about the mobility of industry. "Broadly speaking, we have found out that you can make anything anywhere and that there is less social waste in moving industry than in moving people. As yet we have only negative controls. The government may forbid an industrialist to locate a plant in London, but haven't yet screwed up their courage to the point of telling him where he may build it."

AUSTRALIA PLANS

The Australian Department of Post-War Reconstruction has started some excellent publicity work on planning and housing. Under the title **We Can Do Better** it has issued a pamphlet presenting the case for national planning to meet Australia's need for homes. The Commonwealth Plan, it states, is one first of immediate relief, for which the 1944 target was 1,215 low-cost permanent homes each quarter, backed initially by Commonwealth finance. Fifty thousand houses is the target for the first post-war year, and by the end of the third post-war years it is planned to increase the target to 80,000 dwellings a year. The report of the Commonwealth Housing Commission is quoted; it stresses the need for a scientific attitude to post-war development, and urges the preparation of a national plan now.

Four **Housing** pamphlets are also published by the Department of Post-War Reconstruction. They are written in non-technical language for wide distribution. The first one states **The Problem**; the second gives the **Technical Answers**; the third deals with difficulties of **Administration**; and the fourth gives **The Social Answer.** Each pamphlet poses questions at the end which are designed to promote group discussion.

MOSES THE MOLE

The following are two short extracts from a long reply by Frank Lloyd Wright to Robert Moses' attack on Long-Haired Planners in the *New York Times Magazine* for June 18, 1944 (*see* A.J. Physical Planning Supplement, 16/11/44 p. 363.) The reply, originally invited by the *New York Times*, was refused by them as not being a sufficiently specific reply to Moses; it was subsequently published by Frank Lloyd Wright in Taliesin Square Paper Number Seven.

When Robert Moses and I first met briefly, he picked up a bronze medal which he said was from "his boys." With a smile of satisfaction on his face that showed me it was what he liked most about him, he pointed to a mole cast in relief on one side the medal and said, "you see, I am a Mole."

PLANNER'S SCRAPBOOK

Then Moses the Mole disposed of me. He put me up in the air. Said he : " You are a 'Skylark'."

Of course, I knew what he meant. " Brilliant but erratic " and so, quite beside the mark. The Moles-eye view ? . . . . .

Now, what happens to the furrowing of moles up here in the beautiful green hills of Wisconsin ?

Good rains fall. Finding the little self-seeking channels in the soil they enlarge them until the good top-soil trickles down into streams draining the green valleys. The streams carry it further along toward the great Mississippi where all goes down to the Gulf of Mexico. Soil erosion.

Big-city moleing will do something like that to these hard, sucking bottle-necks which the over-grown villages of America have become in American life ; the soil being the people themselves started on their gravitational way perhaps by unpremeditated opposite intention, like Moses' moleing. What will be left to the Big-city will be only the wrong kind of Building for the " impeccable taste " of the wrong kind of people all in the wrong place. The moles will be out of jobs.

Because **" total-mechanization " is going to create " useless " people under the laws of orthodox finance at a rate not yet conceived of** ! And soon. In spite of as well as because of man's Arrogance in general and the extremes of his Folly, the gigantic mechanical forces unwittingly set in motion as " Progress " are already, **reactionary** ! They are on the move to destroy the poor creature that gave mechanism power. The Robot will destroy the Creature unless the reaction can be used as good Tooling for getting good building in the right way in the right place for the citizen **done in time.**

Therein : " getting good building done in time," lies the simple significance of Broadacres.

Is it so hard to understand ?

The Broadacre City Thesis I sent Robert Moses meant to use this reactionary Machine-force to open, in a natural way (and it can be no matter for the " Strong-arm ") a free life for the Citizen which in our country the administration of government ought to be, and will be, honest enough to call Democracy.

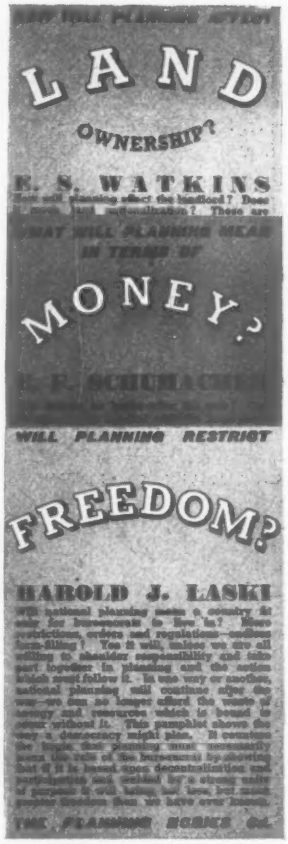
If reaction goes unrecognized much longer as Revolution, then our educated Planners and channelling Moles will only make of this Mechanized Era one vast Tragedy !

Our transplanted youth (hoping to someday come-back home from Foreign-nations) have not only the right to find their own initiative released on their own soil. They have an even better right to find their own lives in their own hands, at last.

Any planning worth more than a tinker's damn should give them the right help to take the right road to such native freedom.

Broadacres, the natural city of Democracy is no invention of mine, I assure you. That City is really by the brilliant but erratic Architect : Nature.

THE PLANNING BOGIES



Few now can deny the need for a greater degree of planning, both physical and economic, if our post-war society is to be any advance on the pre-war. But how should we go about it ? How will planning affect our political freedom ? Exactly what change will it mean in our daily lives, at home and at work ? These are typical of questions being asked ; they show a determination to avoid being led hastily into something which is not yet fully understood, and which is anyhow suspect for the company it has kept abroad. However, if they remain unanswered, these questions turn into bogies which block the path to democratic planning. In the three pamphlets shown on the left the three biggest bogies are examined. They are the bogies connected with property, money and freedom. In the first, *How will planning affect Land Ownership ?* E. S. Watkins describes the law relating to land ownership in England and shows how it can be adjusted to meet the demands of a planned democracy. In the second, *What will planning mean in terms of Money ?* E. F. Schumacher disposes of the bogie that planning will run us into debt, by showing what it will mean in terms of our real wealth. In the third, *Will planning restrict Freedom ?* Harold Laski brilliantly disposes of the " planning means bureaucracy " bogie. The pamphlets cost sixpence each, and are published by the Architectural Press.

PLANNER'S QUIZ

THE ANSWER TO THE LAST PROBLEM

9. Delos, Greece - 5th century B.C. - Typical position of the agora, a general meeting place, in a Greek town. Developed from the geographic point of junction of roads, and symmetrical in form but providing ample opportunity of limited perspectives for buildings and statuary and sheltered corners for talk and discussion, and remaining unseparated from the general life and movement of the town.

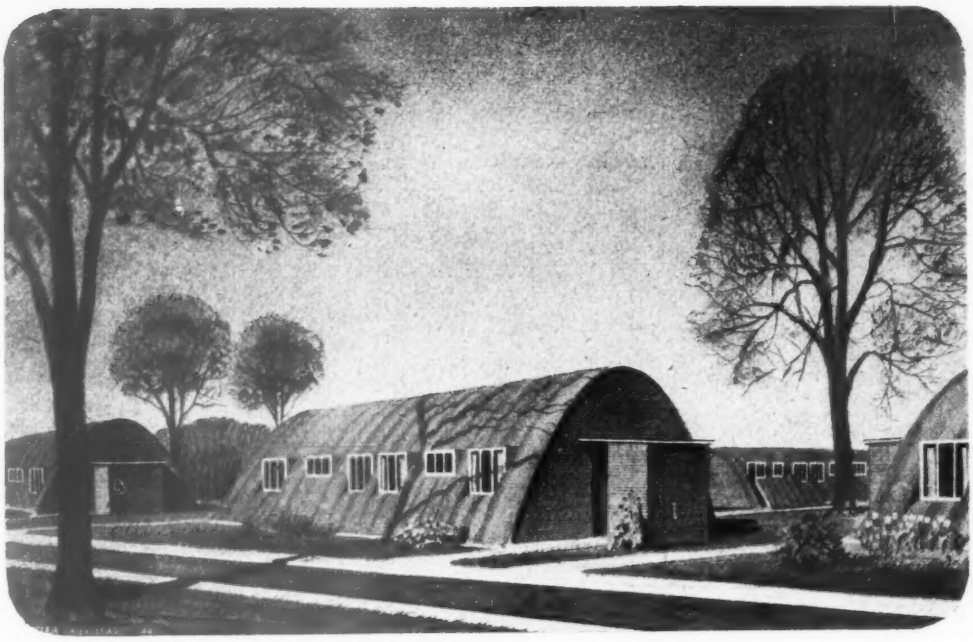
THE NEW SERIES

At the present time the shortage of available labour makes it difficult for any elaborate planning surveys to be undertaken. A thorough *diagnostic* survey remains the only sound preparation for a good plan, but some alternative, more rapid and more labour-saving method must be evolved or we run the risk of post-war plans based upon no surveys at all.

In this new Planner's Quiz series, part of a map will be presented in each Planner's Scrapbook from a Rapid Method of District Survey prepared by the Association for Planning and Regional Reconstruction. In each map the line of a river is included so that places can be readily related by eye throughout the series. All of the information shown on the maps can be deduced from published sources, but these sources will not be given until the next Quiz, when the key to the symbols used on the map will also be given.

There are, therefore, two questions : (1) What do the symbols denote in the map on the left ? and (2) From what published sources was the information taken ?

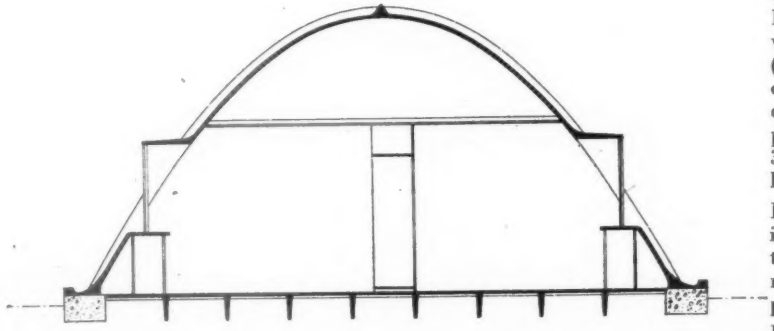
Answer in the next Planner's Scrapbook.



Left, a perspective by Peter Shepheard. Below left, cross section. (Scale : $\frac{1}{8}$ in. to 1 ft.)

EMERGENCY HOUSING

DESIGNED BY E. ROSENBERG, CYRIL SJOSTROM AND J. H. WALLER



GENERAL—This is a proposal for temporary emergency housing similar to that now being erected by the authorities in London to satisfy immediate housing needs. Two types of houses already adopted, the Nissen and the Uni-Seco huts, were illustrated in the JOURNAL for October 26. This housing is not to be confused with the temporary houses to be supplied in accordance with the Temporary Housing Act but is of a purely emergency character.

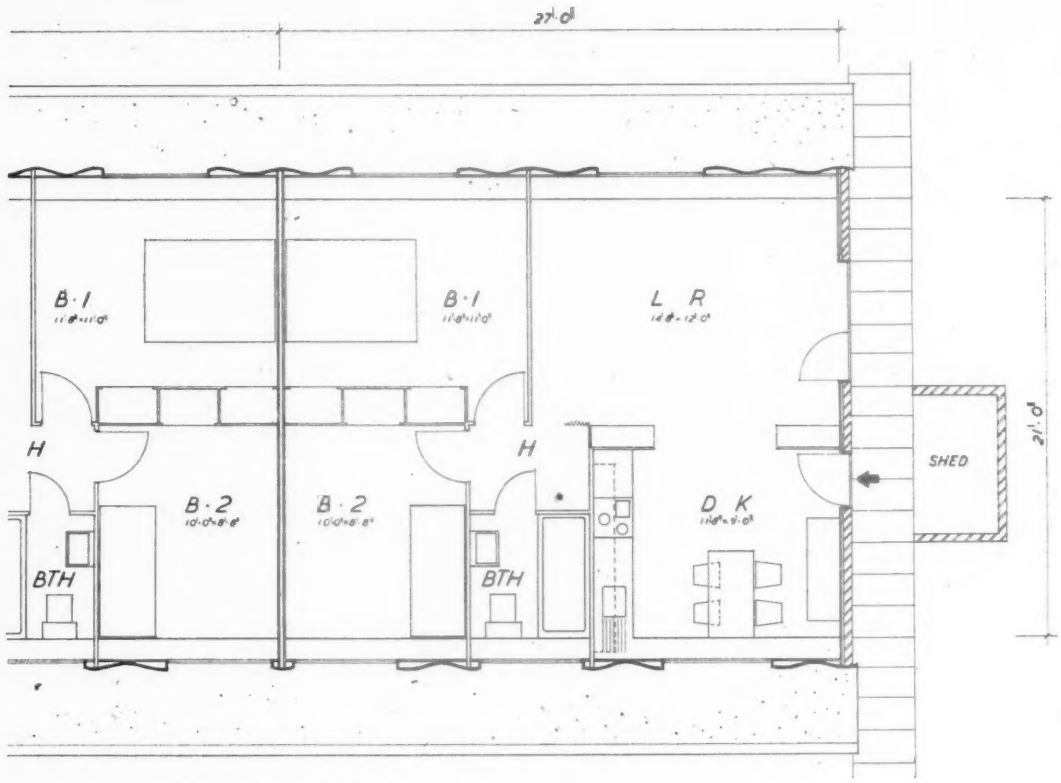
CONSTRUCTION—The houses shown here are built on the system illustrated in the JOURNAL for May 6, 1943, p. 299, designed by the engineer, J. H. Waller. Its basis is a catenarian form of arch, 2 in. thick, of cement and sand, without reinforcement, laid on hessian, which sags naturally and forms corrugations, giving rigidity. The centering used is of standard steel tubing. Joints to take care of shrinkage and expansion are formed at the crest of the corrugations. The ridge contains a steel bar or tube which ties the whole building together longitudinally. A flexible external sealing coat of coloured bitumen waterproofs the structure. The ends are in brick, breeze block or similar material. Partitions are of light timber studding across which hessian is stretched. On this is fixed non-inflammable adhesive and two layers of wallpaper. Dados of building board or plaster board are fixed where required. Ceilings are of wood joists covered with hessian and wallpaper. Floors are of concrete and hessian with insulated air cavity beneath (formed by a simple method which causes the earth to sink after concrete is laid), 2 in. thick, supported on small *in situ* piles at 3 ft. centres. Lino or timber can be laid on the concrete.

INSULATION—Heat insulation is provided by the air space above the ceiling and by the air space made by cupboards and vertical panelling along the walls.

PLUMBING—For plumbing, except for soil pipes, it is suggested that hose pipe be used in place of conventional piping.

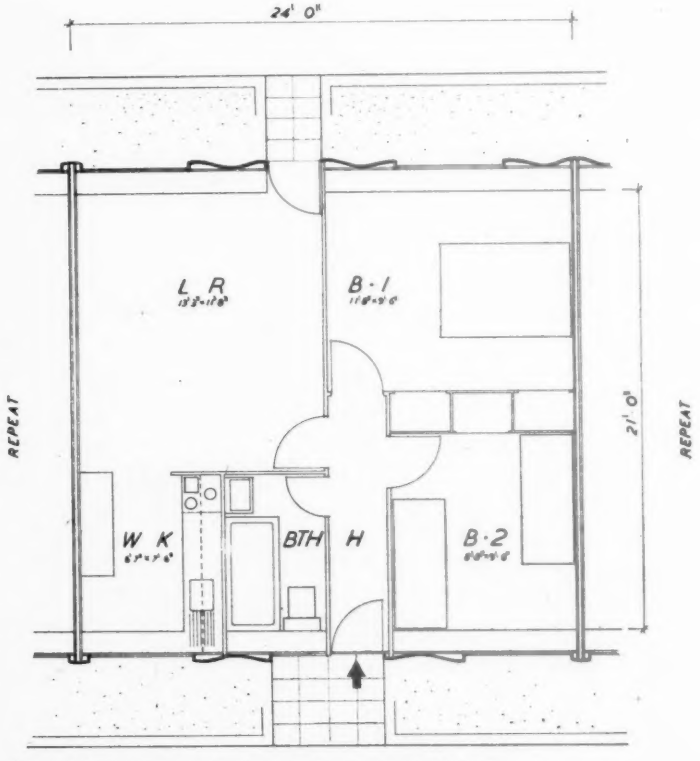
DEMOLITION—The houses can be very quickly built with cheap and readily-available materials. When they have served their purpose, fittings can be salvaged and the shell simply and quickly demolished and scrapped with a minimum waste.

COST—The approximate cost for a pair of houses including services is estimated at £800.

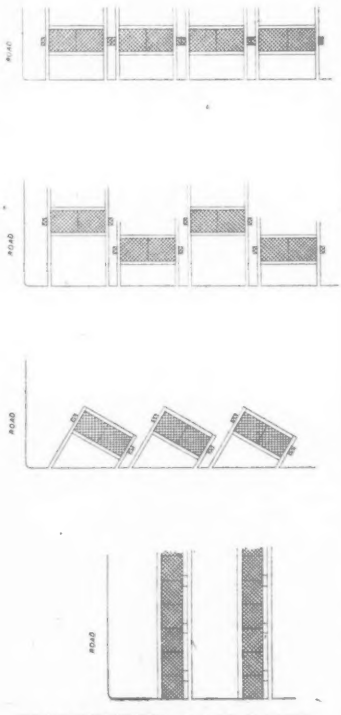


PLAN OF A PAIR OF HOUSES

Above, plan of a semi-detached pair of houses. Below left, plan of a terrace house. (Scale : $\frac{1}{8}$ in. to 1 ft.) Below right, suggested lay-outs.



PLAN OF A HOUSE IN A TERRACE



SUGGESTED LAY-OUTS

EMERGENCY HOUSING

INFORMATION CENTRE

The function of this feature is to supply an index and a digest of all current developments in planning and building technique throughout the world as recorded in technical publications, and statements of every kind whether official, private or commercial. Items are written by specialists of the highest authority who are not on the permanent staff of the Journal and views expressed are disinterested and objective. The Editors welcome information on all developments from any source, including manufacturers and contractors.

PHYSICAL PLANNING

1762 *Dispersal of Staffs*

DISPERSAL. *An inquiry by the National Council of Social Service.* (*Oxford University Press,* 1944, 3*s.* 6*d.*) Discussion of possibilities of dispersing office staffs from large cities (particularly London), based on views of a number of employers and employees.

Their findings can be derived from the following quotations:—

I. The main types of organization which evacuated staffs of any considerable size were: Government departments, public utility corporations, banks, insurance companies, railway companies, building societies, friendly societies.

The question of permanent dispersal needs to be looked at from various standpoints, the most important being:—

(*a*) The general national interest;
(*b*) The wishes and the interests of the staffs;
(*c*) The wishes and the interests of the employing bodies, and their ability to render efficient services;
(*d*) The wishes and the interests of the inhabitants of possible reception areas;
(*e*) The probable effects on the cities left.

The glamour and prestige of London make many anxious to come to it and unwilling to leave it. Much is said in praise of the variety a great city offers. Actually a family with modest means may get more out of the smaller but more accessible facilities of a provincial town than out of the abundant, but more expensive and relatively remote, facilities of London.

It is hazardous to generalize about evacuation; the evidence is too uncertain and too conflicting; but there are a few impressions which can be set down.

First, that, of the reception areas, fairly large towns, or towns which from their special nature, had good cultural facilities seem usually to have given most satisfaction.

Second—the obverse of this—that, except in the case of a few quite small staffs, evacuation to villages or to large houses in open countryside has been unpopular. Certainly some of the least contented staffs visited were living in such places.

Third, that it allayed unrest if at least one director, or highly placed official, lived on the spot.

Fourth, that it helped immensely to be within fairly easy reach of the home city, and to have facilities for occasional visits to it.

The views of the majority of members of evacuated staffs, and the views of the majority of town-planning experts agreed remarkably well. Both favour the town of from 30,000 to 100,000 inhabitants. From the points of view of both staffs and managements, it is desirable that there should be good road and rail communications, and that there should be easy access to a great city. Especially to the generation of those moved, it would be an easing of the difficulties of change if the town were within two hours' journey of London, or other city of origin. Towns within eighty miles of London, and with good communications, are therefore worthy of careful consideration.

Remembering that staffs are likely to carry a high proportion of young unmarried women, it may be suggested tentatively that the total addition to population would probably be about three times the number of employees. If this be so, the employees introduced should not much exceed 7 per cent. of the original population, *i.e.*, a town whose normal population was 50,000 should not receive a staff or staffs of much more than 3,500 persons. But opinions differ a good deal, and some think this figure too high, some too low.

The objections to dispersal are of two kinds. Many of the arguments are based on difficulties which are experienced in any removal: the breaking of ties of friendship, the necessary adjustment of ways of thought and ways of life, the disposal of one house and the acquisition of another, the rearrangement of children's schooling, finding homes for elder children who are employed and cannot leave their occupation, and so on. These difficulties would have to be faced, if and when dispersal were decided upon. They could be minimized by careful planning, and they would be difficulties of a limited period.

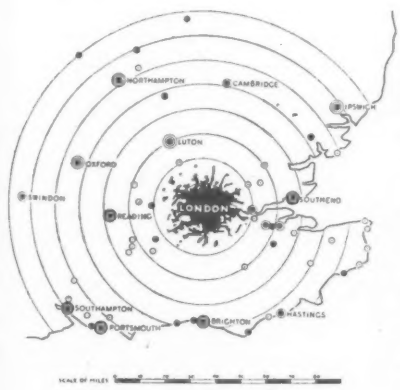
Housing.—A housing association should be formed, the shares in which should be held, one-third by the organization, one-third by the municipality, one-third by members of staff wishing to be accommodated. The houses built would then be neither company houses nor municipal houses, to both of which there are objections. It is not suggested that the housing association should create a staff colony; that would be undesirable from many points of view. Nor need all the houses be occupied by employees of the evacuated organizations; the building of such houses and the occupation of some of them by older inhabitants of the town might release other and more varied types of houses, and in this way there would be an effective mixing of the old and new populations.

Education.—In general, it may be said that what is needed is that there shall be in a town at least one good secondary school for boys and one good secondary school for girls. The most important point is probably the existence or non-existence of a sixth form sufficiently large to justify specialization; other things being equal, large schools have an advantage over small schools.

Medical Care.—At present most provincial towns fall short of the great cities in their medical services and dispersal would involve a real disadvantage. The existence of a well-managed hospital, with a supply of private beds at reasonable cost, is probably the matter of greatest importance.

Leisure.—Obviously, the small or medium-sized town cannot afford the same facilities in the way of first-class professional performances of drama as can the great city. Here the wartime experiments of CEMA are relevant. There seems to be no reason why work on CEMA lines should not be maintained and extended after the war. Similar considerations apply to music. A small or medium-sized town cannot, as a rule, have anything more than a small art gallery. It is, however, possible to arrange for loan exhibitions of pictures. A good public library should be regarded as a necessity. Reports received from a considerable number of small towns indicate that in most of them social life is severely handicapped by shortage of suitable premises. Quite apart from any prospect of dispersal, this is a weak point in the equipment of many English towns which calls for remedy. The possibility of receiving a population accustomed to the greater facilities of the cities renders it more urgent. Facilities for outdoor recreation are as a rule incomparably better in small and medium-sized towns than in great cities.

Shops.—There are many other features in the equipment of a town by which it will be judged. Has it a good selection of shops? Are there other towns with good shopping facilities within easy reach? Is there a good bookshop? Provincial towns vary amazingly in this respect. Are there one or two good restaurants? Is there at least one fairly good hotel? A good garage with hire service is also desirable.



TOWNS OF MEDIUM SIZE WITHIN EIGHTY MILES OF LONDON

Towns 20,000–40,000 ○ 80,000–100,000 ◉
40,000–60,000 ● over 100,000 ◎
60,000–80,000 ◉ Circles at 10 mile intervals

From Dispersal. *See No. 1762.*

ACOUSTICS and Sound Insulation

1763 MOW *Building Study*

SOUND INSULATION AND ACOUSTICS. The Ministry of Works Post-War Building Studies, No. 14. *Report of the Acoustics Committee of the Building Research Board of the DSIR.* (*HMSO,* 1*s.* 0*d.*) Divided sharply into the two subjects. Sound Insulation covers (*a*) insulation against external and internal noise; (*b*) insulation by planning and

structural measures. Desirable standards.

The report is divided sharply into the two subjects of sound insulation and acoustics, which, the Committee is at pains to observe, are not to be confused. Broadly, acoustics is the study of reflected sound, sound insulation the study of transmitted sound, and the latter subject, which occupies the bulk of the report, is of the most immediate value to the architect just now.

Sound insulation is considered under the headings (*a*) insulation against external noise and internal noise, and (*b*) insulation by planning measures and by structural measures. It has been found possible to give approximate values in decibels to the various common noises met with in practice, such as traffic noises, wireless, speech, and so on, and tables are also given of the insulating value of various materials and methods of construction. In combination with these, desirable standards of quiet for various occupancies are tabulated, so that it is possible by the simplest computation to discover whether one's planning is going to be efficient from the noise point of view.

Architects have, of course, always been aware that there are quiet and noisy positions on plan and have tried to plan accordingly, but this report gives them the opportunity to plan with at least an approximation to accepted standards, a most important step forward. In the course of the discussion of the broader aspects of planning the height restrictions commonly found in local byelaws come under censure as tending towards the corridor type street and bad noise planning.

Within the building, the first measure to be taken against noise is careful zoning of noisy and quiet rooms and the segregation of noise sources. Good planning is the first line of attack against noise. This seemingly obvious fact is found in practice to be usually overlooked, with resulting complaint from occupiers. Much evidence has been taken upon the common source of complaint about noise, and it has been found possible to list desirable standards of insulation between house and house, 55 decibels reduction through a party wall, and 45 db. reduction between the noisy and quiet rooms within a building. For floors, an improvement of 15 phons reduction over a bare concrete floor or 20 phons reduction over a timber joist floor is recommended as between flat and flat.

These figures are somewhat higher than those obtained from orthodox construction of low cost housing prior to the war, and the report goes on to suggest structural refinements which will be necessary to attain the new standards, such as, for instance, the use of semi-discontinuous and discontinuous or floating structure. A discussion follows on the specific problems to be met with in houses, flats, schools, office buildings, hospitals, hotels and factories.

The report is indeed a basic document, containing as it does the results of years of investigation at the BRS and elsewhere, and no architect can afford not to be acquainted with it.

EQUIPMENT

1764 **BEDA Kitchens**

ELECTRIC KITCHEN PLANS. (*The British Electrical Development Association.*) Booklet announcing electrical industry's attitude to equipment for post-war homes. Analysis of kitchen design, with examples.

The electrical industry apparently has cleared its corporate mind about equipment to be made for post-war homes. Its intentions are announced in an attractive handbook, also containing a useful analysis of kitchens.

It may be assumed that the equipment described relates to housing above the subsidized standard (for which the Government has initiated the production of certain items of equipment), but we are informed that something better is on the way for more expensive homes.

Reference is made to cookers, water-heaters, space-heating, refrigeration, home laundry appliances, and smaller items. It is obvious that the industry hopes to produce the equipment at reasonable prices for an all-out effort to make electricity the standard kitchen fuel.

The new cooker is a horizontal model, with the oven at hob level; top dimensions are 42 in. x 21 in., and the depth 17 in. Some of the vertical types will remain available.

Water-heaters are arranged to have double-heating so that small or large amounts of hot water can be stored. Fixing beneath or adjacent to the sink is recommended to reduce pipe losses.

The standard refrigerator is to have a capacity of 4 cu. ft., and is intended to be built in at working height.

There are several laundry appliances. An electric wash-boiler is noted, and also an electric wringer and a washing machine. Arrangements for filling and draining the appliances has been worked out.

Reference is also made in detail to cupboards, but it is not made clear whether the industry intends to produce them. Unfortunately, no guidance is attempted in relating cupboard space to the size of house or number of occupants, a refinement which American producers have reached. And for some obscure reason both the English industry and the Ministry of Works in their equipment have departed from the 4-in. x 3-in. toe space well-established in America; a 3-in. x 2-in. size is noted here. It seems a little tight both for cleaning and for toes, especially if you are resting on a stool while you work.

Four kitchen types are studied, and the industry has been guided by a panel of architects. A rational attitude has been taken to the problem of eating in the kitchen, and two of the types—one each for flats and houses—have dining space. The designs are well presented and well thought out.

1765 **Housing Equipment**

MOW EXHIBITION OF STANDARD HOUSING EQUIPMENT. (*Architects' Journal, November* 23, 1944, *pp.* 383-386.) Illustrations and descriptions of exhibition held in Birmingham. Principal items of equipment as recommended in Government's *Housing Manual*, to be adopted by local authorities. Bathroom, kitchen, storage and heating equipment, and their relation to living-room, dining-room and kitchen plans.

1766 **Kitchen Unit**

KITCHEN UNIT AND WASHER. (*Electrical Times, June* 22, 1944, *p.* 733.) Kitchen unit comprising sink, water heater and washing machine, with power-operated wringer.

1767 **Electric Kitchen**

ELECTRIC KITCHEN. *R. Illingworth;* and ANOTHER PLANNED KITCHEN. (*Electrical Review, August* 11, 1944, *pp.* 180 *and* 192.) Descriptions of two all-electric kitchens.

The first kitchen (the Poplar kitchen unit) contains cooker, water heater, refrigerator, wash boiler, iron and sundry auxiliary appliances, fitted into a single unit. The second example is of a complete kitchen, including arrangements for heating and ventilation.

1768 **Distribution Box**

RISING MAINS IN FLATS. *E. E. Jolly.* (*Electrical Review, July* 7, 1944, *p.* 9.) New form of distribution box and some suggestions for wiring rising mains in old and new flats.

The author is the Electrical Engineer of a London borough, and he has developed a new distribution box on the basis of his experience. He has in mind increased domestic loadings and simplicity in installation and use. In new buildings a vertical base is visualized at each staircase, with insulated copper rods for wiring.

QUESTIONS and Answers

THE Information Centre answers any question about architecture, building, or the professions and trades within the building industry. It does so free of charge, and its help is available to any member of the industry. Answers are sent direct to enquirers as soon as they have been prepared. The service is confidential, and in no case is the identity of an enquirer disclosed to a third party. Questions should be sent to: THE ARCHITECTS' JOURNAL, *45, The Avenue, Cheam, Surrey.*

1769 **Associations**

Q *Could you tell me what the aims and policy, professional status (if any) and conditions of membership are of the following?:—*

Association of Building Technicians.
Association for Planning and Regional Reconstruction.
Political and Economic Planning.
Town and Country Planning Association.
Town Planning Institute.

A The Association of Building Technicians, of 5, Ashley Place, London, S.W.1, looks after the interests of employees as regards working conditions and salaries, and aids members to find employment. One of the conditions of membership is that you should be working as a salaried technician in the Building Industry, or studying to become one, or were doing so prior to call-up for the Forces.

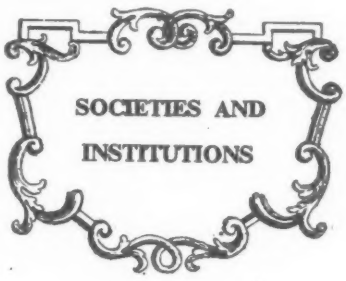
The Association of Planning and Regional Reconstruction of 32, Gordon Square, London, W.C.1, is a centre for research, and gives advice about planning. It neither controls nor competes with other institutions and organizations. More detailed information can be seen on their Broadsheet No. 2, obtainable free on request.

Political and Economic Planning, of Queen Anne's Gate, London, S.W.1, is an Educational Trust, and its purpose is to find and interpret facts bearing on any given problem in the social and economic field. It works through group discussion and issues reports. The annual subscription to PEP's broadsheet, *Planning*, is £1.

The Town and Country Planning Association, of 28, King Street, Covent Garden, London, W.C.2, is an Educational Body, interested in the future of planning. Membership is by subscription.

The Town Planning Institute, of 11, Arundel Street, Strand, London, W.C.2, is the

professional and technical body concerned with planning, and has a rather similar status to that of the Royal Institute of British Architects. Membership is by examination. Further information can be seen in its Year Book, price 2s.



Speeches and lectures delivered before societies, as well as reports of their activities, are dealt with under this title, which includes trade associations, Government departments, Parliament and professional societies. To economize space the bodies concerned are represented by their initials, but a glossary of abbreviations will be found on the front cover. Except where inverted commas are used, the reports are summaries, and not verbatim.

RIBA

ASB Lecture

November 29, at 66, Portland Place, W.1. RIBA Architectural Science Board lecture on CONCRETE: ITS APPEARANCE AND DURABILITY, by N. Davey, B.SC., PH.D., F.S.A., M.INST.C.E. Chairman: J. O. Stillman. A discussion followed the lecture.

N. Davey: In this paper I propose to restrict my remarks mainly to concrete for structural purposes, poured *in situ*—the heavy rather than the light-weight type, which has been defined as concrete weighing less than 120 lb. per cu. ft. From the architectural point of view, perhaps the most important properties structural concrete should possess are homogeneity and high density—homogeneity to provide, amongst other things, for good appearance, and high density for durability. I must admit that much has been said and written on how such good quality concrete can be produced, but yet I think it is safe to say that the production of good concrete remains one of the most difficult and tantalizing tasks confronting the architect, builder or engineer. It demands his close attention and control at all stages, since, unfortunately, if control is relaxed at any time, so that blemishes occur in the concrete, it is doubtful whether subsequent repairs will succeed in rectifying the defects.

1. *CONTROLLING FACTORS IN THE PRODUCTION OF CONCRETE OF UNIFORM QUALITY AND OF GOOD APPEARANCE.*

No surface treatment by tooling, or other means, apart possibly from completely rendering over the surface, will conceal a piece of bad concrete, any more than colour washing will improve a bad drawing. The first essential, therefore, whatever the subsequent treatment of the surface, is the production of a uniform and homogeneous concrete—a clean background on which to work. To achieve this, care must be exercised firstly in the selection of materials, sand and coarse aggregates, and in the design of the mix; secondly, in the grading and workability of the mix; thirdly, in mixing, placing and compacting the mix; fourthly, in the design of the formwork; and, fifthly, in the after-care of the concrete.

(a) Selection of Materials.

If things go wrong on a concreting job, how often the blame has been put on the cement; whereas, in fact, this is the one material which seems least likely to go wrong, provided, of course, it is properly stored, off the ground and under cover, and not allowed to become stale and lumpy. Also, it should not be used excessively, as this will lead to crazing and undue shrinkage. Only very rarely does normal Portland cement fail to come up to British Standard Specification requirements, although it may sometimes happen that rapid hardening Portland cement does not attain the nigh early strength expected of it.

In selecting sand for concrete work, the following are the principal considerations to be borne in mind:—

(i) The structure and composition of the grains, or particles.

(ii) Their cleanliness and freedom from harmful impurities.

(iii) Their size, shape and grading.

The mineral composition of the sand is important in so far as it affects the strength and resistance to wear of the finished concrete. The sand should be inert, *i.e.*, chemically stable and of low porosity. The groups of material fulfilling these requirements are crushed granite, quartz rock, the densest sandstone, some limestones, and naturally occurring siliceous sands. Washed sand only should be used for the best class work, since the presence of excessive amounts of clay, loam, silt, etc., may affect the setting of the cement, leading to a weak concrete, and prevent proper adhesion of the cement to the sand particles, and of the concrete to any reinforcing steel which it may contain. The presence of excessive silt and of organic impurities in sand can be detected by applying the simple tests specified by the DSIR and BINC Codes or in British Standard Specification 882.

With regard to shape of particles, there are two schools of thought, one advocating sharp sand and the other rounded sand. In general, however, the sharp sand, being derived mainly from the residue accumulated during the crushing of stone for the production of larger sizes of aggregate, has clean freshly broken surfaces to which the cement adheres excellently, but the angularity, or sharpness, of the grains tends to make the mix harsh-working, and in consequence may call for additional labour in placing it. Rounded, naturally occurring sand, on the other hand, although perhaps not having such good surfaces, tends to produce more workable concrete, easier to compact. On balance, therefore, there is little to choose, but it would be wise to avoid very sharp and splintery materials.

Sand is usually classed as that material 90 to 95 per cent. of which passes through $\frac{3}{16}$-in. B.S. sieve. If it is natural sand or crushed gravel sand, it should generally not contain more than 10 per cent. passing through No. 100 B.S. sieve, or if derived from crushed stone, not more than 15 per cent. With regard to the intermediate grain sizes, the following limits provide a useful guide.

TABLE 1

Passing B.S. Sieve	Per cent.	
	Natural sand or crushed gravel sand	Crushed stone sand
$\frac{3}{8}$ in.	95 to 100	90 to 100
No. 7	70 to 95	60 to 90
14	45 to 85	40 to 80
25	25 to 60	20 to 50
52	5 to 30	5 to 30
100	0 to 10	0 to 15

Much that has been said about sand applies equally to the coarse aggregate. This should consist of natural gravel, crushed gravel or crushed stone, or crushed blast-furnace slag. It should be hard, strong, durable, clean and free from adherent coatings, and should contain no harmful material in sufficient quantity to affect the strength and durability of the concrete and, in the case of reinforced concrete, to attack the reinforcement. Mica, shale or similar laminated materials should not be present in quantities sufficient to affect the concrete. Certain crushed dolerites sometimes erroneously referred to as crushed granite, have been found to contain minerals which render them unsuitable for use as concrete aggregates. Dolerites should therefore be used only when experience has shown that aggregates from a particular source have proved satisfactory.

Failure may occur if unsuitable aggregates are used. For instance, in one case a porous limestone aggregate was used and in consequence the concrete was unable to resist the action of frost. In another case an unstable blast-furnace slag was used—its subsequent expansion leading to the disintegration of the concrete. Some blast-furnace slags are, however, quite suitable.

(b) Proportion of Mix and Workability.

The proportion of sand to coarse aggregate to be used will vary according to the degree of workability desired and the type of materials used, but normally it ranges from 50 to 70 per cent., those mixes with the higher proportion of sand being suitable for the more workable concrete. A proportion of sand higher than 70 per cent. is not to be encouraged. Generally it will be found that if crushed rock is used as coarse aggregate a rather higher proportion of sand will be required; also the proportion of sand should be increased as the maximum size of the coarse aggregate is decreased; or as the sand itself becomes coarser; or the percentage of fine material in the coarse aggregate becomes smaller. Different conditions of placing and compaction require different degrees of workability. For example, some stiff harsh working mixes which cannot be easily or properly placed by hand compaction, can be placed efficiently by vibratory means to give excellent results.

(c) Mixing, Placing and Compaction.

The methods of mixing, placing and compaction of the concrete play a most important part in determining its quality. Mixing must be sufficient to produce the uniform dispersal of the cement throughout the entire mix, so that all particles of the aggregate become coated. The water content must be precisely regulated if the best results are to be obtained. Wet concrete mixes will tend to segregate during placing, leaving an excess of coarse aggregate at the bottom of a pour with an excess of fine material higher up, while at the top a layer of cement, fine sand, and water

known as laitance will collect. This layer when set will have a chalky appearance, and will certainly prevent the effective bond of the succeeding pour of concrete, to that already placed. The resistance to penetration of moisture, to weathering to abrasion or erosion, and to chemical attach, will be very poor at these laitance layers. On the other hand, concrete mixes which are too dry cannot be easily rammed into place, and tend to leave voids and honeycombed patches, which again offer little resistance to attack from external agencies.

There are on the market a number of proprietary materials which when added to the concrete mix act as dispersing agents and give the mix greater workability.

A word or two on placing. The mixing of the concrete should be carried out as close as possible to the point of deposition, so that the distance of transit of the freshly mixed concrete is kept small. This will reduce the possibility of segregation of the mix. The concrete having arrived on the job should be deposited in the forms carefully, and not allowed to fall from a height, thus causing further segregation, and it should be spread evenly along the forms and not allowed to dump in a heap and allowed to flow along the forms to find its own level. The concrete should be punned or vibrated uniformly over the surface to produce a well compacted mass, and not continued beyond the point when excess water begins to appear on the surface of the concrete. Excessive vibration is undesirable—in fact, the use of vibratory methods of compaction call for just as much good judgment and just as much care in application as do hand methods of compaction. A careless workman, for example, who leaves an internal vibrator operating in one position, allowing it to sink slowly into the mass, perhaps while waiting for the next batch of concrete, instead of withdrawing it from the compacted mass may do more harm than good. Over vibration may also produce segregation of the mix. Vibration will not necessarily produce the best surface to concrete walls. The most recent experience particularly in the United States of America has shown that the increasing use of vibratory methods of compaction has led to an increase in surface voids, and in consequence investigations have been undertaken to find means of reducing the trouble. This has led to the development and use of absorptive form linings of the fibreboard type, which absorb the excess moisture which collects on the inner surface of the forms during the process of vibration, and gives to the concrete a smooth and even matt finish of pleasing appearance.

(*d*) *Formwork.*

The importance of the design of formwork has already been dealt with in a previous lecture by Mr. Parry,* and little need be said here except possibly that good appearance of a monolithic concrete structure more often than not depends more upon the treatment of formwork pattern than upon any other single factor, and that the pattern left by well designed formwork often provides an excellent finish to the concrete. The result of carelessness in the design of formwork for example, the haphazard use of horizontal boards in one place with vertical ones in another, with no consideration as to the resulting pattern that will be left on the concrete, is unpleasant. Subsequent attempts to obliterate such unsightly boardmarks by tooling or by any other method will not necessarily prove successful. There are a number of other points which should be borne in mind. For example, tight formwork, in true alignment is essential for good work. Boards should not be matched in width, narrow tongued and grooved boards usually producing the most pleasing surfaces. Old and new boards used together on the same work will produce very marked contrasts in tone and texture where each board has been. Under some circumstances this may perhaps not be objectionable. Wire form ties should not be used since the wire if left in the concrete will cause unsightly rust stains.

(*e*) *The After Care of Concrete.*

Once the concrete has been placed and consolidated it should not be disturbed, but should be protected from the weather—from the effects of cold and of heat and drying winds by applying suitable protective coverings. As soon as the formwork is removed the concrete should be sprayed liberally with water and the operation repeated 24 hours later.

2. *FINISHING AND TEXTURING.*

(*a*) *Types of Finish.*

The types of finish that can be adopted fall broadly into the following groups:—

(i) Smooth surfaces, as coming direct from the forms or linings: or with a light surface dressing by grinding or sandblasting—the latter method having been used recently in America to give excellent and pleasing results.

(ii) Rough surfaces produced by chipping away the hard surface of the concrete to reveal the aggregate.

(iii) The more expensive methods, particularly from the point of view of maintenance, of painting or rendering.

I do not propose to deal with this last group of treatments except to say that cement paints with satisfactory durability are available in this country. In a paper to the Institution of Civil Engineers.* I described the extensive tests carried out by the Building Research Station to study the effectiveness of various treatments.

The general conclusion from this work was that the tooled finishes exposing the aggregate were quite satisfactory providing the concrete was homogeneous and of good quality. The roughened surfaces did, however, tend to darken as a result of the deposition of soot from the atmosphere, but as the darkening was uniform over the whole surface, and not streaky as was the case with the smooth, as distinct from the matt, surfaces, this defect did not appear serious and could at least be tolerated.

The roughening of the surface to expose the aggregates can be carried out by wire brushing the concrete while it is still green, but more often than not roughening has to be performed later when the concrete has become too hard for the wire-brushing to be effective. In this case the use of bush-hammers and chisels, operated electrically or pneumatically, are necessary. Many interesting surfaces have been produced, particularly on the Continent, by this last method.

(*b*) *Colour.*

Colour can be imparted to the surface by either of three ways:

(i) By using coloured aggregates.

(ii) By using pigmented cement.

(iii) By applying tinted renderings.

The least satisfactory of these is the use of pigmented cements, and the most permanent and satisfactory results are obtained by the use of selected aggregates, which, when exposed by either of the processes described above, impart the required colour to the surface. To illustrate the range of tones which can be obtained by choosing suitable aggregates I have had prepared the series of slabs exhibited here. The mixes are of identical proportions and grading throughout. In the first series normal grey Portland cement has been used with river sand and the selected coarse aggregates; in the second series, normal grey Portland cement has been used with white sand and the selected coarse aggregate; while in the third series, white Portland cement and white sand have been used with the selected coarse aggregate. The coarse aggregates are obtained from various types of crushed brick.

It is possible, therefore, to obtain at one extreme, excellent smooth matt surfaces, by the use of absorptive linings to the formwork, as used in America, but unfortunately not yet worked out in this country, and at the other extreme rough mechanically treated surfaces—and to obtain satisfactory colour tones, by the use and exposure of selected aggregates. It seems that little appreciation is given to the fact that a wide variety of coloured natural stones are available in Great Britain and that a classified list of British quarries producing red, brown, black and green chippings has been published by the Road Research Laboratory, as Wartime Road Note No. 2, obtainable from H.M. Stationery Office, under the title of *Sources of Naturally-Coloured Chippings in Great Britain.* Particulars of the sources of supply of white and cream stones are also available.

When the selected aggregate is expensive or in short supply, consideration should be given to the possibility of using it in the form of thin precast slabs of concrete as permanent shutters to provide an external veneer to the main body of the concrete. As the concrete veneer slabs can be factory made under closely controlled conditions, very satisfactory results can be obtained by this method. One large and well-known building erected in London during the war was treated in this way.

(*c*) *Surface Defects.*

I would like to draw attention to some of the surface defects that should be guarded against. Firstly, the presence of pyrites in gravels from some deposits may on subsequent decomposition cause staining. Similar staining may result from the corrosion of wire form ties, odd pieces of binding wire, or nails accidentally dropped or left in the forms; or if the cover to the reinforcing steel is insufficient to prevent corrosion.

Improperly made construction joints and joints between successive lifts will not only disfigure the surface of the concrete, but will allow the penetration of moisture. Special attention should be paid to the design of proper weatherings and flashings on all projecting features, cills, ledges, etc., so that rainwater is thrown clear of the walls. Many otherwise attractive buildings and structures have been disfigured by lack of attention to this matter. If rainwater is allowed to find its own path down the wall instead of being thrown clear, it will flow in conspicuous runnels carrying grime and corrosive agencies with it in doing so.

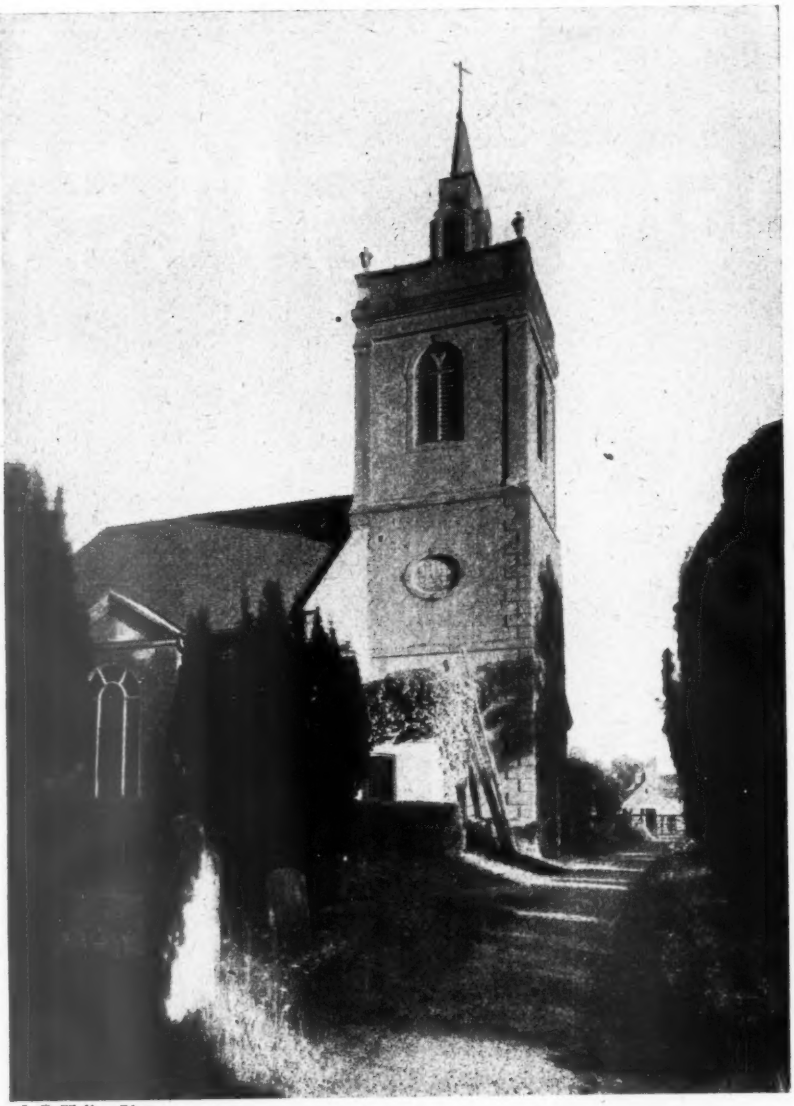
3. *BASIC REQUIREMENTS FOR CONCRETE OF GOOD DURABILITY.*

For durability, to resist corrosion and erosion, it may be taken that the concrete should be as dense as possible and of good strength. The aim should be to choose and grade the aggregate carefully, to avoid oversanded mixes, to use sufficient but not an excess of cement, in order to reduce possible shrinkage trouble and to avoid surface crazing, and to use just sufficient water to enable the concrete to be placed readily in position to form a compact mass.

The operation of concreting in cold weather is always a troublesome problem, calling for considerable care. The setting of the cement is stopped if the water in the mix freezes. Freshly-placed or green concrete may be broken up by frost and the hardening of the concrete is very much slowed down even if it is not actually freezing. This means, of course, that the formwork cannot be stripped at the right time.

* See A.J., Feb. 12, pp. 304-306.

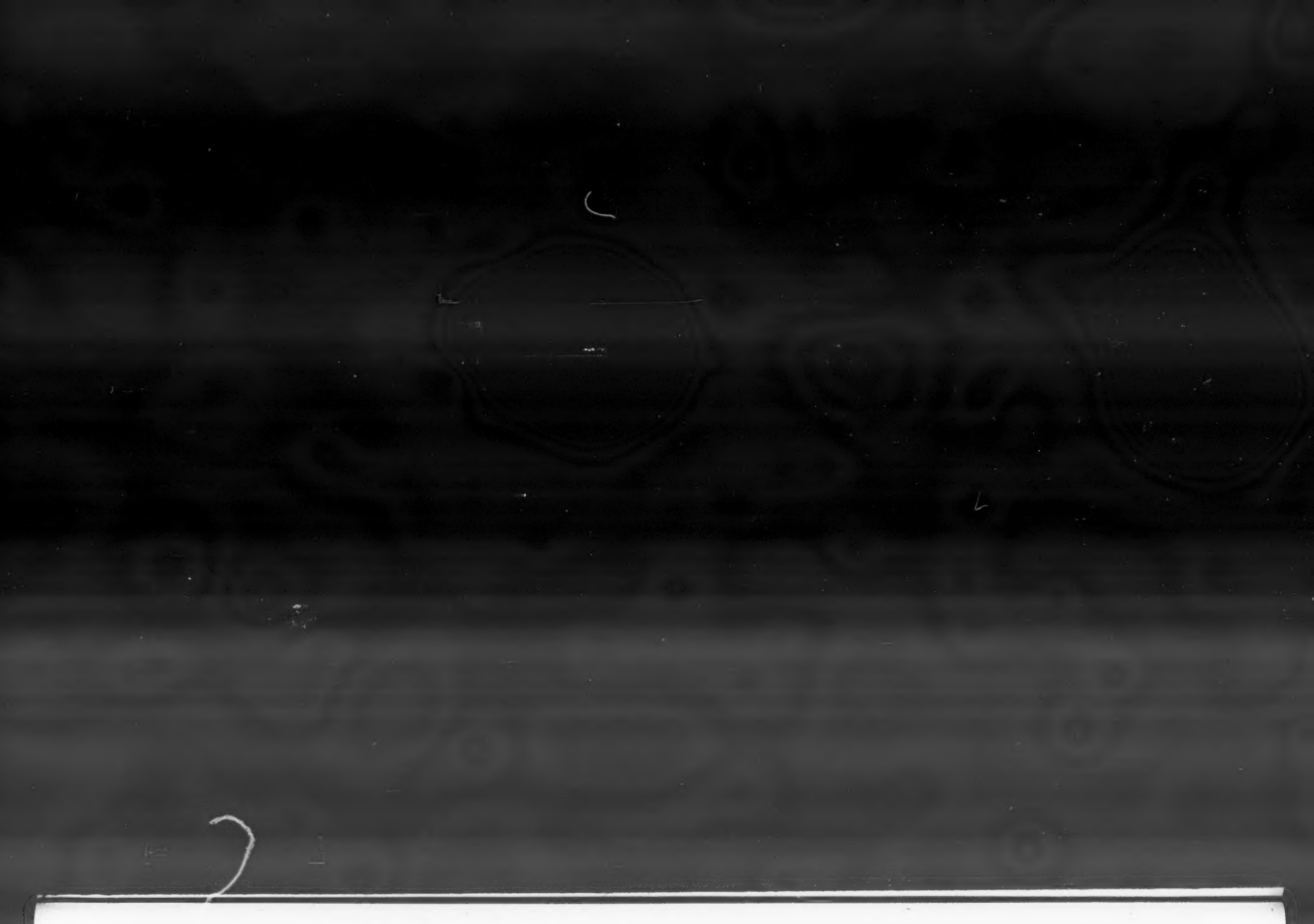
* "The Surface Finishing of Concrete Structures"—*Journ. Institute Civ. Eng.*, April, 1942.



L. E. Walker, Photo.

NORTH RUNCTON CHURCH

IN 1708, a number of King's Lynn gentlemen, including the architect, Henry Bell, raised funds to rebuild this parish church at an estimated cost of £824. This was a notable achievement in economical building, and despite certain alterations it retains, particularly inside, a charm and dignity that greater elaboration would have served only to obscure. The repeated lesson of the past is that enforced economy is often a challenge to the architect's ingenuity with a resultant gain to the building. Many who had economy in mind when they constructed basements of reinforced concrete made impervious with 'PUDLO' Brand waterproofer, have since blessed it for the comfort and protection such basements have provided during air attacks.



In normal weather conditions, therefore, the aggregate, fine and coarse as well as the cement, should be stored in a sheltered place out of the cold and wet. The concrete-mixing plant should be installed in a sheltered place, and mixing should not be commenced until the air temperature has reached 34° F., and should be stopped again if the air temperature shows no sign of reaching 38° F. If the air temperature is falling, stop concreting at 38° F. On stopping the work, cover up all concrete already placed with tarpaulins, or layers of tar paper, cement sacks and the like. The concrete should be inspected to make sure that it has not frozen, taking particular care not to mistake frozen concrete for hardened concrete. Careful judgment will be needed to be exercised as to the time at which the formwork may be stripped, but the minimum times given in Table II may be taken as a guide.

TABLE 2

Minimum Times for Stripping Formwork

Stripping of Formwork	Normal Portland Cement Concrete	
	Cold weather (just above freezing)	Normal weather (about 60° F.)
Beam sides, walls and columns (unloaded)	6	1
Slabs (props left under) ..	10	3
Removal of props to slabs ..	14	7
Beam soffits (props left under)	12	7
Removal of props to beams	28	16

In prolonged severe weather additional precautions such as preheating the water, and aggregate, may have to be taken, and possibly measures to heat the formwork and to apply heat to the newly placed concrete. The mixing water can be heated in one or other of the following ways:—

(i) By steam jet or steam coil in the supply tank;

(ii) By domestic type of water heater in circuit:

(iii) By passing it through a coil in a large coke stove.

The water should be heated to 150° F. for the first few mixes until the mixers, barrows, etc., are warm, after which the water temperature may be reduced to 120° F.

The aggregate can be heated by heaping it over corrugated iron staging on dwarf brick walls with a fire underneath, or by steam pipes passing through the stock piles.

The formwork and reinforcement can be heated by applying hot water to them or by applying steam from a boiler through a hose pipe fitted with valve connections to regulate the flow as required.

Again in severe weather after the concrete is placed, it should be protected from cold winds by enclosing the work with tarpaulins or canvas screens and heating by means of braziers or steam pipes. Low pressure steam is useful because it prevents the concrete drying out, a point to be guarded against if braziers are used.

Admixtures of calcium chloride have been successfully used in cold weather, though, in general, the preheating methods indicated above are still to be preferred. The amount of calcium chloride usually added is 2 lb., as normally manufactured for use in concrete, to 1 cwt. of cement. If obtained in lump form it must be dissolved in water before it reaches the concrete materials. It is possible, however, to purchase flaked calcium chloride, in which case it may be used solid. Cements are obtainable with the calcium chloride already incorporated. The user of calcium chloride should satisfy himself, by enquiry of the manufacturer that the material he is buying is of suitable grade for the work in question.

At temperatures below normal, but which do not fall below freezing point, the addition of calcium chloride is advantageous, and accelerates the setting of the concrete and improves its strength at early ages. The rate of strength development at temperatures of 32° F. to 35° F. is still, however, below that of the concrete without calcium chloride addition at normal temperatures, and to obtain a proper degree of hardening for urgent work it is necessary to use preheating as well. At temperatures which fall more than 2° or 3° below freezing point the addition of calcium chloride cannot be relied upon to give protection against freezing, while in any event the rate of strength development becomes very slow, and other additional precautions such as preheating should therefore be adopted.

(a) Resistance to Frost Action.

If concrete is cracked by excessive shrinkage, or has a crazed surface, or is honeycombed or porous, moisture may penetrate, and if this should subsequently freeze, ice so formed in the pores of the concrete may disrupt the concrete, causing it to spall. The disintegration will be progressive; as the spalling or flaking opens up fresh concrete to attack. Segregated patches and porous laitance planes which, as already noted, may occur at faulty construction points, are a source of danger and may suffer very severely from frost attack. The use of soft aggregates and aggregate with dusty or clayey surfaces, which prevent the proper adhesion of the cement, also increases the risk of frost attack.

(b) Resistance to Chemical Attack.

For similar reasons defective concrete will not resist the action of inorganic salts entering the concrete in solution in water. The chemicals are mainly mineral sulphates, such as those of calcium, magnesium, sodium and potassium, and these occur in various types of soils, ground waters, sea waters, sewage effluents and factory wastes. They combine with the free calcium hydroxide or with the hydrated calcium aluminate in the concrete to form salts which decompose the concrete. In the case of reinforced concrete, *e.g.*, piles, retaining walls, tunnels, tanks, etc., it is doubly important to provide an adequate thickness of dense concrete cover to the steel. If moisture should penetrate to the steel, possibly carrying with it deleterious chemicals, corrosion of the steel is certain. Although in the first instance penetration to the steel may only have occurred at one small point in the concrete cover, the corrosion may spread along the length of the bar, eventually causing the cover to spall away, fully exposing the steel to further attack. Concrete of high quality is essential therefore for reinforced concrete work in order to prevent access of moisture, and air to the steel. If this is obtained, the reinforcing steel is, under ordinary conditions, adequately protected.

Extensive tests by the BRS on many reinforced concrete piles made with differing types of cement, with mixes of varying proportions and workability and with different depths of cover to the steel, exposed to the tidal action of sea water, over a large number of years, has indicated that for normal Portland cement concrete of 1:2:4 mix, a minimum cover of not less than 2 inches should be provided, and that the mix should be stiff consistence with a slump not exceeding 1 inch.

Serious corrosion may occur from sulphate and chloride attack in Portland cement concrete pipes and other concrete products, buried in the soil, and it is for this reason that the more resistant high alumina cement concrete is sometimes used instead, but it should be borne in mind that unless the mix is dense this type of concrete may also be attacked.

Petrol, fuel oil and petroleum distillates in general do not attack matured concrete, excepting possibly creosotes containing phenols, etc. It is, however, a matter of considerable difficulty to make a concrete impermeable to the lighter oils.

Lactic acid arising from the souring of milk, acetic acid encountered in vinegar and various pickling processes and in certain other industries, and tartaric acid, a constituent of fruit juices, will, even in dilute solutions, attack set Portland cement concrete. Oleic, stearic and palmitic oils encountered in industry as constituents of oils and fats, all have a very definite effect on concrete. In general vegetable oils and fats have a destructive action on Portland cement, and the attack is more rapid when the oil is freely exposed to air and moisture as when spilt on the floor. Although sugar solutions do not, in the cold, have a very marked action in dense well matured Portland cement concrete, hot sugar solutions or sugar liquids which have fermented, such as may be encountered in jam factories, have a destructive effect. Generally alumina cement concrete is more resistant to these materials.

The first essential requirement therefore if the concrete is to resist chemical attack is that it should be dense, and of low porosity. Wet mixes are dangerous, and mixes too dry to compact properly are to be avoided; while prolonged curing of the concrete so as to form a protective film of calcium carbonate on its surface will enable it to resist the attack more effectively.

(c) Fire Resistance.

Structures made from concrete possess good fire-resistant properties. By this is meant that the concrete itself possesses the ability to withstand heat and the subsequent action of water without losing strength unduly, and without cracking or spalling. In this the concrete is helped by the fact that it possesses low thermal conductivity and has a high heat capacity. In the case of reinforced concrete, however, it is only a matter of time before exposure to fire will result in sufficient heat reaching the steel to cause it to expand and push off the protecting cover. Again, some aggregates tend to split and disintegrate under the action of heat, or on subsequent quenching with water, and this will reduce the effectiveness of the cover. Flint aggregate does this, but blast-furnace slag, some limestones and crushed brick are less prone to this defect, and in general give better protection. Also, recent tests have shown that if the concrete cover, although cracked and partially disintegrated by the action of heat, is held in position by light gauge wire mesh embedded in it, thus maintaining a protective cover to the steel, the resistance of the structural member is greatly increased.

Concrete encasements to steelwork, either in the form of precast blocks, or cast *in situ*, using slag or crushed brick aggregate, also afford a high order of protection if properly held to the steel member by wire mesh or wire reinforcement.

Many reinforced concrete buildings and structural members have been damaged by fire during the war period, and it may be appropriate here to comment on the methods of repair. The after-effects of fire on reinforced concrete structural members vary with the maximum temperature reached. The time during which the temperature remained high, the rates of heating and cooling, the nature of the aggregate and the composition of the concrete. When the temperature of the concrete reaches 300° C., oxidation of small quantities of iron present produces a characteristic pink colour. The pink layer increases in depth as heat penetrates, and this discoloration may be taken as a rough guide to the extent of possible injury to the concrete. Extensive exposure of reinforcement, and marked discoloration of the surface concrete should not, however, be taken to in-

dicate that the member is beyond repair. Loose and softened concrete should be cut away with care and the least shock to adjoining concrete. Hard concrete, although tinged to a pink colour, may be allowed to remain, provided that the remaining concrete in the member is sufficiently thick and sound to justify repair. Wire reinforcement or mesh should be attached to the main reinforcing bars before replacing the concrete cover, so as to provide mechanical bond. It may be necessary for obtaining tying in of the new work to the old to cut away some of the undamaged concrete.

(*d*) *Resistance to Wear.*

One of the main uses of concrete in building construction and estate development is for floors, footpaths, roads, etc., and good resistance to all forms of wear is required. Vast areas of concrete floors have been laid during the war period, mainly in factories and hutments, and the experience gained has been of the greatest value; the following paragraphs are based on a note prepared recently at the Building Research Station on the subject.

Concrete floors may be either of two main types: (*a*) self-finished concrete, with no special finishing course, or (*b*) granolithic type, with a special finishing course having a specially selected aggregate. Heavy-duty floors are usually of the second type, and the requirements for attaining satisfactory results with this type are as follows.

The aggregates should be of an approved type of hard natural rock and of suitable grading, and should all pass a ½-in. sieve. They should conform to the requirements of the British Standard Specification for aggregates for granolithic floor finishes, B.S. 882. The mix should normally be 1 cement, 1 fine aggregate, 2 coarse aggregate, or 1 cement to 2½ of mixed aggregate, all proportioned by volume. The water content should be the minimum necessary to give sufficient workability for laying and compacting.

Where possible, the finishing should be laid as soon as the concrete base has hardened sufficiently to bear the workmen's weight. If it is laid on a hardened base, it should not be less than 1½ in. thick; if laid before the base has hardened, it should not be less than ¾ in. thick. The base should be thoroughly cleaned and, if hardened, should be roughened by chipping or by other suitable treatment. The surface should be wetted, preferably overnight, a grout of neat cement or cement and sand should be brushed on immediately before laying the surface concrete. This grout must on no account be allowed to dry out. When laying on a hardened base the finish may be applied in one or two layers. In the latter case the underlying layer should be placed and levelled so that the finishing layer has a thickness of not less than ½ in. The underlying layer should be thoroughly compacted by punning or rolling. The top layer should be immediately applied and levelled and compacted by a screeding board or other convenient means.

Finishing should be carried out with the float and trowel; the period after laying at which the trowelling is carried out is very important. Only just sufficient to give a level surface is done immediately after laying and further compaction and finish is given later at intervals up to some hours when the mix has stiffened sufficiently so that a hard compacted surface can be attained without bringing laitance to the surface. No application of dry cement or rich cement-sand slurry to the surface should be permitted. The floor should be kept damp for a minimum period of 7 days and during this period should not be exposed to any traffic.

(*e*) *Hardening of Existing Concrete and Granolithic Floors.*

Treatments of various types are given to concrete or granolithic floors for the purpose of hardening the surface and reducing dusting and abrasion. The following types which have been used successfully on floors of reasonably good quality may be mentioned. Floor surfaces which are weak and friable or otherwise of poor quality cannot be effectively treated.

The sodium silicate should have a suitable soda-silica ratio, and hence should be of a grade sold for the purpose. An example is Grade P84 sold by Imperial Chemical Industries.

The surface to be treated must be clean, since the solution will not penetrate into concrete covered by a film of grease or oil. In some cases sweeping to remove dirt and dust may be adequate, but usually, and always with old floors, additional cleaning is necessary. The surface should be wetted with soapsuds and scrubbed with a wire brush or fine steel wool, then mopped and a final scrubbing given with soapsuds and a fibre brush. The floor must be allowed to dry so that the sodium silicate solution can be absorbed into the surface. In applying the treatment a solution containing one part of sodium silicate to four to six parts of water is sprayed over the surface and spread evenly with a mop or soft brush; the weaker solution is used on the less absorptive surfaces. Any excess is wiped off and the floor allowed to dry. This will require 24 hours or more, according to conditions. The surface should preferably then be washed with water and again allowed to dry before applying a second coat containing one part sodium silicate to three or four parts of water. This coat should similarly be allowed to dry and be washed to remove any free soda formed. A third coat may be applied if the floor is still porous. The life of the sodium silicate treatment varies with the quality of the concrete, and the floor may need retreatment after one or two years.

Magnesium or zinc silicofluorides may be purchased as fine white crystals from any chemical suppliers or in proprietary form from various manufacturers. The crystals are dissolved in water, 1 lb. per gallon being used in the first coat and 2 lb. per gallon in subsequent coats. Three coats are usually applied at 24-hour intervals; there is no need in this case to wash between coats or after-treatment.

Drying oils and preferably Tung oil, either neat or thinned with Turpentine or White Spirit, is applied to the concrete surface by brushing, any excess being wiped off about two hours after application.

F. J. Samuely : Dr. Davey has managed to compress an enormous amount of information into a short lecture, and I congratulate him on the way in which he has dealt with a subject which is not of particular interest in itself, apart from its actual application. Concrete is, of course, a complicated substance, and he has taken two aspects of it to talk about. If he did not mention strengths and waterproofing of concrete, I am sure it is not because he does not believe that these are any less important than durability and aspect, but simply that the subject is too large for everything to be discussed.

With regard to form work, tongued and grooved boards are usually somewhat expensive to use, and it is very rarely that one can afford them, but there are other methods of getting a good, smooth surface. Masonite is used; shuttering may be steel lined, in which case very much larger panels can be produced, and so on. An interesting surface has often been obtained by introducing a filling material on the inside of the shuttering—sandpaper, corrugated paper, or some similar material. Canvas, hessian and so on have been used.

For getting a rough finish there is one method which I should like to ask the lecturer why he did not mention, and that is the use of chemicals which retard the cement on the outside. This method is very much used in France. It probably requires very careful handling, but in some cases reasonably good results have been obtained. The cement is retarded on the outside, and after the shuttering is struck, after two or three days the cement can be scratched away easily. The danger is, of course, that too much or too little of this material is provided. With too little no effect is produced, and with too much the whole concrete might be spoilt.

Another point of interest is the coloured surface. Sometimes both coloured cement and coloured aggregate have been used. As a rule these methods are rather expensive. One method of cheapening the process is to use sliding shutters. The coloured concrete is put on the outside of the sliding shutter, and the shutter is then pulled upwards. In that way only 1 inch or less of the depth of the concrete need be done in the special mix.

There is one question on which I should like to have the lecturer's opinion. When should concrete be used for a large surface, for walls and so on? There are some problems there. Very often concrete has been spoilt, not so much by the effects resulting from the concrete as such, but merely because it has been so rigid that even a slight settlement of the foundation leads to cracks, and when cracks start, water starts discoloration, and so on.

With regard to fire-resisting qualities, there is a rather remarkable discrepancy in most of our bye-laws, especially for multi-storey buildings, in that 8 in. of concrete or brickwork is regarded as fireproof for external walls, or alternatively 4 in. of reinforced concrete, whereas actually 4 in. of reinforced concrete is very much less fireproof than an 8-in. concrete wall. I wonder whether there is any special reason for that provision.

I do not know whether the lecturer would care to say anything about the hardening of surfaces by metal powder. That has been used for some surfaces, and I have had some good experiences, but I do not know whether they are representative.

N. Davey : I must admit that I left out a number of things, of which waterproofing is one. Waterproofers should not be used if the job can be made waterproof without their use. It is possible to make quite good concrete tanks by careful grading and compaction and careful design of the mix, and in those conditions waterproofers are not essential. Waterproofers are not a cure for bad mixing and bad design.

A number of jobs have been done in London with the Masonite lining which was mentioned. Sainsbury's factory at Blackfriars is a case in point. Filling materials have been used, and some very interesting textures have been produced with crêpe rubber, among other things, or corrugated rubber. The only trouble is the crinkling in the forms; it is very difficult to fix them uniformly and hold them in position during the deposition of the concrete, and one is inclined to get a wavy surface or creases in the material. I have not dealt with sliding shutters. That method has many uses, but I understand that it is not always easy to apply.

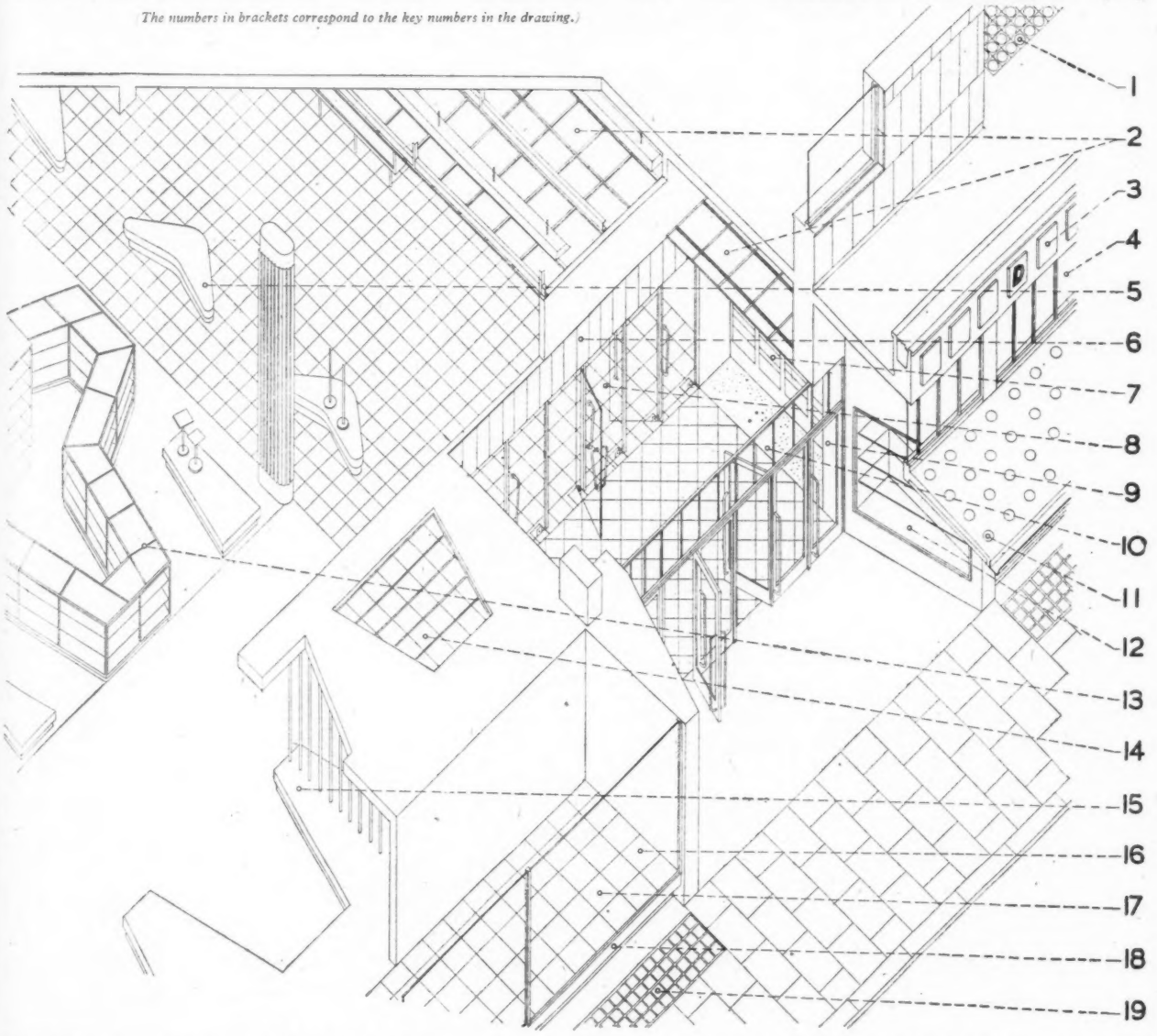
I do not know why concrete should be used for large walls. Personally, I prefer masonry walls. I feel that the best solution is to have a stone or brick facing with a concrete backing. That is the sort of construction which I myself would prefer, and it follows what the Romans and the Greeks would have done.

For fire-resistance I agree that an 8-in. brick wall is better than a 4-in. reinforced concrete wall. There seems to be a slight discrepancy in the bye-laws there, but I hope that many of these irregularities in the bye-laws will be cleared away as a result of the research work which is being carried out

FACTS ABOUT GLASS FOR ARCHITECTURAL STUDENTS

SPECIFICATION FOR GLASS IN A LARGE STORE (2)

The numbers in brackets correspond to the key numbers in the drawing.



ROOFLIGHTS (1): "ARMOURLIGHT" Toughened Lenses.

INTERNAL CIRCULATION AND LOBBY (2): Laylight to fluorescent lighting, formed of panels of Georgian Wired Cast, white acid treatment.

NAME PLATE (3): Thick Polished Plate Glass, deep sandblasted with back illumination, for day and night lighting.

CLERESTORY LIGHTING (4): Prismatic Glass, angles 1, 2 or 3, to suit day-lighting conditions.

DISPLAY STAND (5): Plate glass top.

VESTIBULE: *Surround to internal doors* (6): "VITROLITE."

Department location plates (7): Thick Polished Plate Glass, deep sandblasted with back illumination, for day and night lighting.

Inner doors (8): Frameless "ARMOURPLATE."

Entrance doors (9): Clear Polished Plate Glass.

Fanlight (10): Stippled Polished Plate.

CANOPY (11): "ARMOURLIGHT" Toughened Lenses, set in reinforced concrete.

SMALL DISPLAY WINDOW (12): "ARMOURPLATE" shelves.

COUNTER (13): Top, front and shelves of "ARMOURPLATE."

INTERNAL DISPLAY: *Laylight* (14): Formed of panels of Georgian Wired Cast, white acid treatment.

Display platform (15): Plate Glass top.

SHOP WINDOW: *Window bed* (16): Squares of silvered Rough Cast double rolled or stippled dull grey silvered Plate, to reflect skyshine.

Window (17): Polished Plate 8′ high.

Stallboard (18): Coloured "VITROLITE" or Toughened Black Glass.

PAVEMENT LIGHTS (19): Square prismatic lenses.

This is published by Pilkington Brothers Limited, of St. Helens, Lancashire, whose Technical Department is always available for consultation regarding the properties and uses of glass in architecture.

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on the subject, though I cannot say whether that point will be dealt with.

With regard to metal powders for hardening, a number of proprietary processes have been used. There is the Ironite process, and others which involve the trowelling of cast iron into the surface of the concrete. The people who supply the material suggested that this iron rusted and expanded and filled the pores, but I am not sure that that is the action; I imagine that any expansion of the iron would tend to disrupt the concrete. Probably the mere fact of having iron filings there gives a harder wearing surface. Carborundum is also used.

W. A. Forsyth : Is Dr. Davey in favour of an absorbent aggregate? I have been working with brick concrete and with crushed sandstone concrete, and I find that they have certain advantages. With brick concrete and with absorbent aggregates generally there is a structural combination between the matrix and the aggregate; with ballast, which is non-absorbent, there is no such structural combination, but merely adhesion. The softer aggregates, such as brick, are lighter in weight. Brick is warmer in temperature and has less tendency to sweat, and it is less resonant. It has greater fire-resistance than other materials. That is the only condition which I find that engineers will accept—that its fire-resistance is greater than that of ordinary aggregates. It can be repaired, by reason of its suction, in a way which is not possible when ballast is used, and it will take plastering or rendering quite easily. I think it is subject to less shrinkage. With brick concrete I should be inclined to use an angular sand; I think that that would go better than a rounded sand.

We have had very little test yet of the combination of cement and ballast and ferrous metal such as steel, which is the most rustable form of ferrous metal, except that one sees now and again some failures which have been up for about thirty years. I went with Dr. Davey to see an instance of that on the Thames, a concrete silo where the cover was insufficient and the whole thing is coming to pieces.

My last observation concerns slab finish. I understand that all the examples which Dr. Davy has brought here are cast *in situ*. A building was recently illustrated in the Press which is called the Citadel, an Admiralty building. It is a production with which the architect had very little to do, but the architect had a good deal to do with the finishing of it. The facing is a slab 3 in. thick and 3 ft. x 18 in., and two of those, when placed in position, coincided with a 3-ft. lift in the concrete, which is cast up to the slabs. The slabs are used there as the centring or form work. No form work was used, except that the slabs were strutted as they were erected, and the concrete cast up to them. That is all that I am permitted to say about that building, but it is an instance of where the slab has been used as the form.

N. Davey : With regard to absorbent aggregates, I think that slightly absorbent aggregates are preferable, and, from the point of view of appearance, particularly aggregates which tend to dust slightly during the course of time. I have a sample here of limestone aggregate, and I am fairly certain that if that were exposed in London and one went back to it in a year's time, one would find a sort of dusty appearance and dust coming off, owing to a slight chemical action on the surface. That tends to keep a clean finish. The same sort of thing happens with some of the bricks.

I agree in general with the remarks made about a brick concrete. It certainly is more fire-resistant, and, if I may hark back two thousand years, the Romans realized that and, in fact, used brick concrete, using lime and crushed brick, for their hypocaust flues. They also used brick and lime mixes wherever they wanted an impermeable concrete. The lower course of London wall, where the ground is waterlogged, was made with tile mortar. For rendering a damp wall they would use a tile mortar mix, and for torching the tiles on roofs they would use a tile mortar mix.

A. Pott: I believe that some engineers will not allow bush hammering as a surface finish for fear of impairing the bond between the reinforcement and the concrete, and I should like to know what Dr. Davey has to say about that.

N. Davey : I suppose that bush hammering must reduce the effective cover. The mere fact of hammering a concrete must bruise it in some way, and proper allowance should be made for that. If you are going to bush hammer a reinforced concrete structure, you might have to have 2 in. of cover instead of 1 in. Experience will guide you as to the proper allowance. For that reason it is not favoured by many structural engineers, and rightly so; it is more suitable for monolithic unreinforced masses.

ANNOUNCEMENTS

The Institution of Heating and Ventilating Engineers has moved to 72/74, Victoria Street, London, S.W.1. Telephone: Victoria 0146/7.

Mr. A. Percy Taylor, A.I.A.S., M.INST.R.A., Registered Architect and Incorporated Surveyor, has acquired the Architectural and Surveying practice of the late Mr. Leonard Smith, L.R.I.B.A., F.I.A.A., of 59, Chapel Street, Belper, Derbyshire, at which address he proposes to continue the practice.

COMPANY MEETING.

TIMBER FIREPROOFING COMPANY

YEAR OF ACTIVITY AND PROGRESS

A SUCCESSFUL TEST

MR. WILLIAM J. GARNER'S STATEMENT

The thirty-third annual general meeting of the Timber Fireproofing Company, Limited, was held on December 15, at 81, Cannon Street, London, E.C.

Mr. Wm. J. Garner, the chairman, presided.

The following is the chairman's statement circulated with the report and accounts :—

The year to September 30, 1944, has been one of the most active and progressive in the history of the company. The Midland works have been fully occupied throughout the period, and the whole of the profit as disclosed by the accounts has been derived from them. The new works in the north have now gone into production, but as the special circular accompanying this report deals in particular with it, no further comment is necessary here.

The net profit for the year and the proposed allocations are clearly set out in the directors' report, and in connection with the transfer to taxation reserve it should be noted that the amount covers the company's liability to income-tax and National Defence Contribution arising on the current year's profits. Owing to past deficiencies there is no liability to Excess Profits Tax ; in fact, there is still a substantial deficit to carry forward.

COST OF ADDITIONAL PLANT

In the balance-sheet this year we have given effect to the cost of the additional plant ordered for the new works, most of which had been delivered and installed. Consequently, you will notice that the item under the heading of " plant and machinery " has increased from £14,334 to £32,892, and that current liabilities include a sum of £13,483 representing that portion of the plant not paid for at the date of the accounts. Another item calling for comment is the company's investment in war stock. Of the £10,000 previously held, £7,500 worth has been sold and a similar amount of tax reserve certificates purchased. The stocks and debtors each show an increase, a healthy sign, indicative of the larger turnover handled by the company.

Consequent upon the original decision to erect another works in the North, the board, as the result of the indications of demands made and to be made upon us, resolved to enlarge the proposed plant so that its capacity would be equal to the past year's output in the Midlands. This necessitated further outlay to that originally contemplated, hence the offer to the shareholders to subscribe for additional capital on the terms outlined in the accompanying circular.

VALUE OF " OXYLENE "

A point I wish to make is on the question of the possible industrial and domestic post-war demands for our process. During and as the result of the war, we must all have become far more " Fire Risk " minded, and I do not think it is sufficiently known that timber can be rendered efficiently fire-resisting by our " Oxylene " process, a process which has stood the test of time, including the two great wars, and which has long since been recognized in official quarters by use in the ships of the Royal Navy.

There are some 700 shareholders in the company who could become 700 agents, and I ask you to remember and pass on the slogan whenever and wherever you have the opportunity that " Oxylene-treated timber and plywood change a fire risk into a ' fire stop.' "

On the question of administration, you will observe in the agenda of the annual general meeting that you will be asked to pass resolutions converting the issued share capital into stock. The Companies Act requires shares to bear distinctive numbers, but there is no such requirement relating to stock. In the opinion of your directors, the distinctive numbering of shares does not afford any protection against fraud, but it does involve a great amount of clerical labour. It is therefore proposed to follow a course which has already been adopted by many companies, of converting the existing shares into stock. It will in no way affect marketability because the stock will continue to be dealt in as units of 2s. each.

The chairman, addressing the meeting, said that recently, in conjunction with the Timber Development Association, two doors constructed of Oxylene-treated Canadian red pine had been submitted to fire-resistance tests at the Fire Offices' Committee's testing station at Elstree in accordance with the British Standards Institution Definition No. 476 of 1932. Both doors gave a fire-resistance of one hour and were placed in grade D. That was an improvement on the fire resistance, under the same conditions, of ordinary hardwood doors, such as teak or oak. Oxylene-treated Canadian red pine was also subjected to the spread of flame test and satisfied the requirements of Class 1.

The report and accounts were adopted, and a dividend of 10 per cent., plus a bonus of 7½ per cent., less tax, was approved.

Resolutions converting the shares into stock were also sanctioned.

CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advt. Manager, "The Architects' Journal." War Address: 45 The Avenue, Cheam, Surrey, and should reach there by first post on **Friday** *morning for inclusion in the following Thursday's paper.*

Replies to Box Numbers should be addressed care of "The Architects' Journal," War Address: 45 The Avenue, Cheam, Surrey.

Public and Official Announcements

Six lines or under, 8s.; each additional line, 1s. THE INCORPORATED ASSOCIATION OF ARCHITECTS AND SURVEYORS maintains a register of qualified architects and surveyors (including assistants) requiring posts, and invites applications from public authorities and private practitioners having staff vacancies. ADDRESS: 75 EATON PLACE, LONDON, S.W.1. TEL.: SLOANE 5615. 991

COUNTY OF ROXBURGH.

APPOINTMENT OF ARCHITECT.

Applications are invited from duly qualified persons for appointment as Architect to advise the County Council in respect of their Post-War Housing Programme, to prepare all plans, quantities, etc., and to supervise all work carried out.

Salary up to £750 per annum, according to qualifications and experience.

Applications, stating age, qualifications, experience and position with regard to military service, together with copies of three recent testimonials, should be lodged with the undersigned on or before 10th January, 1945.

JAMES R. HUME,
Acting County Clerk.

County Offices, Newtown Street, Boswells.
16th December, 1944. 950

CITY AND COUNTY OF THE CITY OF EXETER.

APPOINTMENT OF CHIEF ASSISTANT ARCHITECT.

Applications are invited for the above appointment in the City Architect's Department at a salary of £500 per annum, rising, subject to satisfactory service, by annual increments of £25 to £600 per annum, plus cost of living bonus at present £49 10s. 9d.

Candidates should be members of the Royal Institute of British Architects, and should have wide experience in the design and carrying out of important architectural works, preferably including housing schemes, schools, and other municipal buildings. Experience in precinct design will also be an advantage.

The appointment will be subject to one calendar month's notice on either side, and to the provision of the Local Government Superannuation Act, 1937. The person appointed will be required to pass a medical examination.

Applications, stating age, qualifications, previous and present appointments, present salary, full details of experience and date when available, together with copies of three recent testimonials, should be sent to F. R. Steele, F.R.I.B.A., F.S.I., A.M.T.P.I., City Architect, 2, Southernhay West, Exeter, not later than 27th January, 1945.

Applications from Architects serving with H.M. Forces will receive consideration.

C. J. NEWMAN,
Town Clerk.

Exeter.
21st December, 1944. 949

COUNTY BOROUGH OF CROYDON.

ARCHITECTS' DEPT.—THE BOROUGH ENGINEER'S ORGANIZATION.

Applications are invited from qualified persons for the following vacancies on the established staff. The persons appointed will carry out their duties under the direction of the Assistant Architect.

Applicants must have had a good general knowledge of the architectural work undertaken by a local authority (excluding schools):—

	Salary.
Two SENIOR ARCHITECTURAL ASSISTANTS, with wide Housing experience ...	£465—£525 (Grade D)
GENERAL ARCHITECTURAL ASSISTANT, with Housing experience	£400—£445 (Grade C)
ARCHITECTURAL ASSISTANT ...	£340—£385 (Grade B)

Plus war bonus in each case (at present £49 8s. per annum).

Form of application may be obtained from the Borough Engineer, Town Hall, Croydon, and should be returned to me not later than 17th January, 1945.

E. TABERNER,
Town Clerk.
944

CITY OF ST. ALBANS.

CITY ENGINEER AND SURVEYOR'S DEPT.

Applications are invited for the following appointments in the above Departments:—

(*a*) ENGINEERING ASSISTANT.—Temporary. Salary Grade B, Eastern District Council Scale (£310—£15—355 per annum), plus current cost of living bonus, £49 8s., per annum. Applicants must be A.M.Inst.C.E. or A.M.Inst.M. & Cy.E., and have had good experience in general municipal engineering.

(*b*) ENGINEERING ASSISTANT.—Temporary. Salary Grade C, Eastern District Council Scale (£365—£15—£410 per annum), plus current cost of living bonus, £49 8s., per annum. Applicants must be A.M.Inst.C.E. or A.M.Inst.M. & Cy.E., and have had considerable experience in Housing Estates, road and sewer works, and a thorough knowledge of general municipal engineering.

(*c*) TECHNICAL ASSISTANT. — Permanent. Salary Grade D, Eastern District Council Scale (£420—£20—£480 per annum), plus current cost of living bonus, £49 8s., per annum. Applicants must have had previous Town Planning experience with a Local Authority, be conversant with the various Acts and Orders, and have practical knowledge of the preparation of a Town Planning Scheme. Candidates must have passed the final examination of the Town Planning Institute, and preference will be given to those holding an Architectural Engineering or Surveying Qualification in addition.

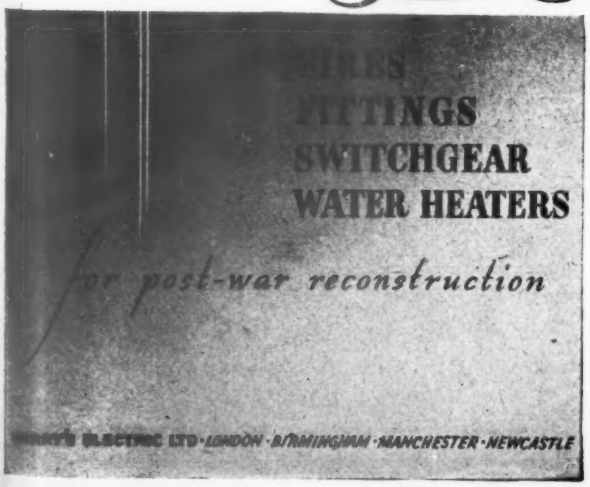
All the above appointments will be subject to one month's notice on either side, and the successful passing of a medical examination, and in the case of the Technical Assistant, to the Local Government Superannuation Act, 1937.

Applicants must state their position regarding Military Service.

Applications, in writing, stating age and experience, together with copies of two recent testimonials (non-returnable), should be received by me not later than Monday, the 15th January, 1945.

S. H. E. CRANE,
Town Clerk.

Town Clerk's Office, 38, St. Peter's Street, St. Albans.
December, 1944. 947



EDINBURGH COLLEGE OF ART.

SCHOOL OF ARCHITECTURE—DEPARTMENT OF TOWN PLANNING.

Applications are invited for the post of INSTRUCTOR IN TOWN PLANNING. Salary £400 to £500 per annum, according to qualifications and experience. The appointment, which involves 20 hours' teaching per week during College terms, will be for one year in the first instance. The holder of the post is allowed to undertake private professional practice.

Applications (3 copies) must be lodged not later than 20th January, 1945, with the Registrar, College of Art, Edinburgh, 3. Testimonials are not required, but the names and addresses of two persons to whom reference may be made should be given. 943

WIMBORNE AND CRANBORNE RURAL DISTRICT COUNCIL POST-WAR HOUSING SCHEME.

APPOINTMENT OF QUALIFIED ARCHITECT.

The above-named Council invite applications for the appointment of a Qualified Architect in connection with their Post-War Housing Scheme.

Preference will be given to those candidates who have had special experience in designing cottages for picturesque rural localities.

Applications, stating qualifications and experience, accompanied by copies of three testimonials, must be received by me not later than Tuesday, the 16th day of January, 1945.

M. HARVEY,
Clerk of the Council.

Rural District Council Offices, 21, West Borough, Wimborne, Dorset.
22nd December, 1944. 948

Architectural Appointments Vacant

Four lines or under, 4s ; each additional line, 1s.

Wherever possible prospective employers are urged to give in their advertisement full information about the duty and responsibilities involved, the location of the office, and the salary offered. The inclusion of the Advertiser's name in lieu of a box number is welcomed.

QUALIFIED ARCHITECT and Quantity Surveyor required; car driver; salary, £500 per annum, and opportunity for partnership. Details to Box 936.

ARCHITECT'S REPRESENTATIVE required for Scotland by well-known Paint Manufacturers; applicants must have previous experience; please give full particulars when replying. Box 946.

REQUIRED, immediately, experienced Architectural Assistants; must be first-class draughtsmen and well trained, for important large scale work. Apply, stating age, salary, and experience, Herbert J. Rowse, F.R.I.B.A., Martins Bank Building, Liverpool, 2. 945

Architectural Appointments Wanted

Architectural Assistants and Students seeking positions in Architects' offices will be printed in "The Architects' Journal" free of charge until further notice.

CONTINENTAL ARCHITECT, qualified, with many years' experience, seeks employment. Box 421.

QUALIFIED ARCHITECT requires post as Assistant; surveys, working drawings, details; accurate drafting; maintenance and war damage; a designer of taste. Box 420.

STRUCTURAL ENGINEER is prepared to undertake Design Work, etc., in spare time; steelwork or reinforced concrete; Wessex area preferred. Box 418.

ARCHITECTURAL ASSISTANT. Inter. R.I.B.A. Standard, keen, adaptable, exempt H.M. Forces, experienced in commercial, private and Local Government offices 6 years, seeks position in London area. Box 419.

Planning

As originators of the Auto-Recorder System of Machine Milking, we have had extensive experience of planning layouts to accommodate the new technique. The Ministry of Agriculture's Clean Milk Bill, when passed, will mean a large increase in the number of new or modified farm buildings required. The position will be affected also by the findings of the English and Scottish Commissions on this important subject. The service of our Technical Department is available to any Architect who may be consulted in these matters. Write in confidence to: Gascoignes (Reading), Ltd., Berkeley Avenue, Reading.

Factory Wanted

Four lines or under, 4s.; each additional line, 1s.

COMPANY, engaged on Essential Engineering Work, requires factory with covered area of not less than 10,000 sq. ft., on site area of at least 2½ acres. Bombed building with sound foundations would be considered; district as near Central London as possible. Immediate post-war possession also considered. Replies treated in strictest confidence. Agents please note. D. Sebel & Co., Ltd., 55, Lant Street, S.E.1. HOP 3803.

Miscellaneous

Four lines or under, 4s.; each additional line, 1s.

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FENCING AND GATES of every type, supplied and erected. Specialists in chain link. Boulton & Paul, Limited, Norwich. 662

MONOMARK Service. Permanent London address. Letters redirected immediately. Confidential, 5s. p.a. Royal Patronage. Key tags 3 for 1s. 3d. Write BM/MONO5R, W.C.1. 44

WELL-KNOWN SPECIALIST on building materials re-opening consulting practice, closed during war, is now able to undertake a few non-competitive additional research and technical market investigations; well equipped chemical and physical laboratories. Inquiries to Box 410.

J. O. SHEPPARD, late of 21, Bedford Row, W.C.1 (and the Granwood Flooring Co., Ltd.), now at 1, East Road, Chadwell Heath, Essex, and on war work, thanks Architects for past cordiality, and looks forward to meeting them again when his new office opens. 800

Educational Announcements

Four lines or under, 4s.; each additional line, 1s.

R.I.B.A. QUALIFYING EXAMINATIONS.
Mr. C. W. Box, F.R.I.B.A., M.R.San.I.
Courses by Correspondence and Personal in Studio.
115, Gower St., London, W.C.1.
TELEPHONE: EUSTON 3305 and 3906.

R.I.B.A. and T.P. INST. EXAMS. Private Courses of Tuition by correspondence arranged by Mr. L. Stuart Stanley, M.A., F.R.I.B.A., M.T.P.I. Tutor, 161, West Heath Road, N.W.3. Tel.: SPE. 5319. 415

EDINBURGH COLLEGE OF ART.

ANDREW GRANT SCHOLARSHIPS.

The Board of Management may award in March, 1945, four Scholarships of £45 to £80 per annum for three to five years for admission in October, 1945. Candidates must be under the age of 19 on 1st October, 1945, and must show evidence of exceptional artistic ability. One Scholarship of £120 per annum for two or three years may also be awarded to a student who has already reached an advanced stage of training and is under the age of 22 on 1st October, 1945. The College incorporates Schools of Architecture and Town Planning, Design, Painting and Sculpture, and is well endowed with Travelling Scholarships and Fellowships.

Application Forms and further particulars may be obtained from the Registrar, College of Art, Lauriston Place, Edinburgh, 3.

The last date for receiving applications is 31st January, 1945. 903

Alphabetical Index to Advertisers

For Appointments (Wanted or Vacant), Competitions Open, Drawings, Tracings, etc., Educational Legal Notices, Miscellaneous Property and Land Sales—*see* pages xlvii and l.